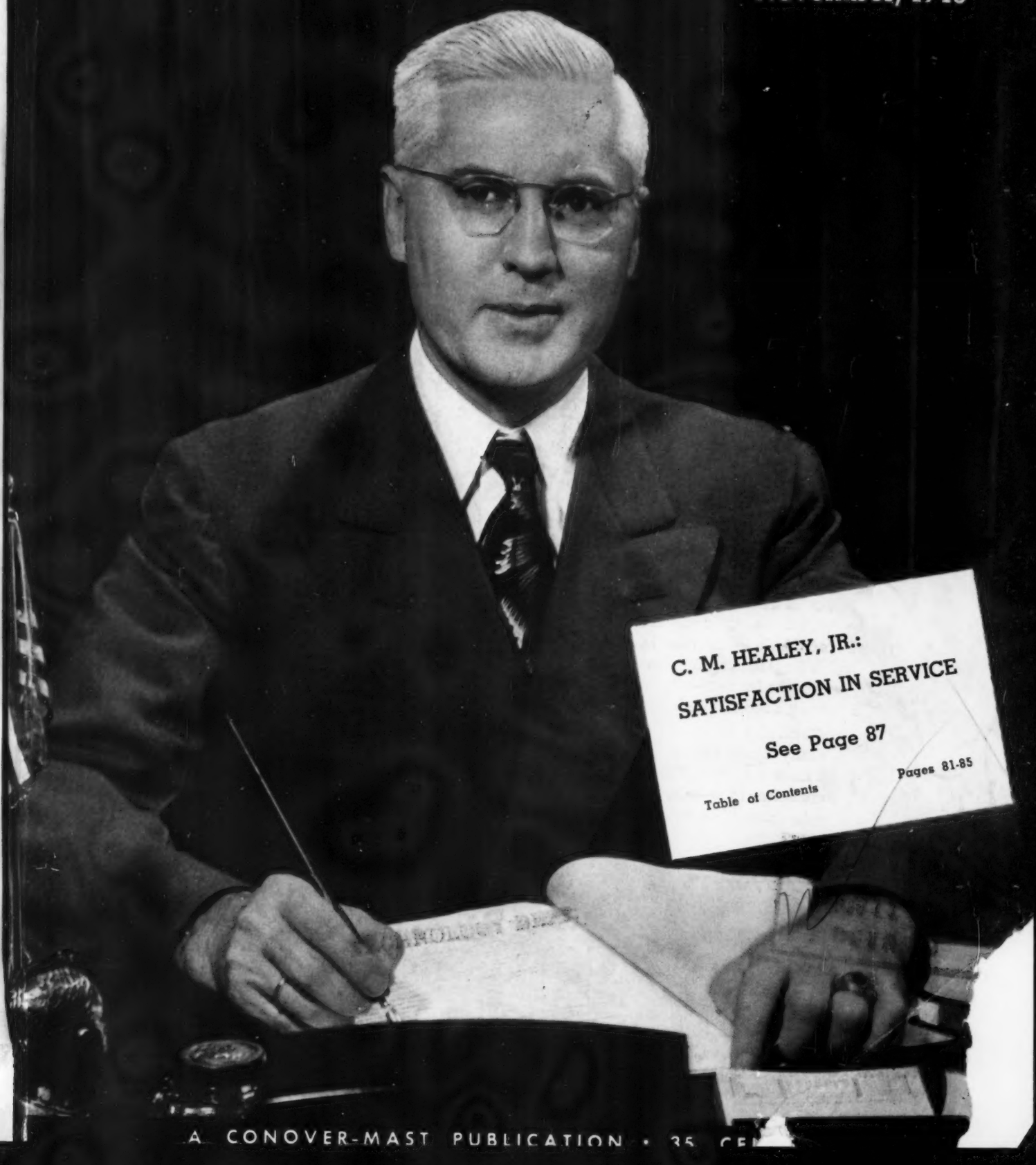
PURCHASING

November, 1946

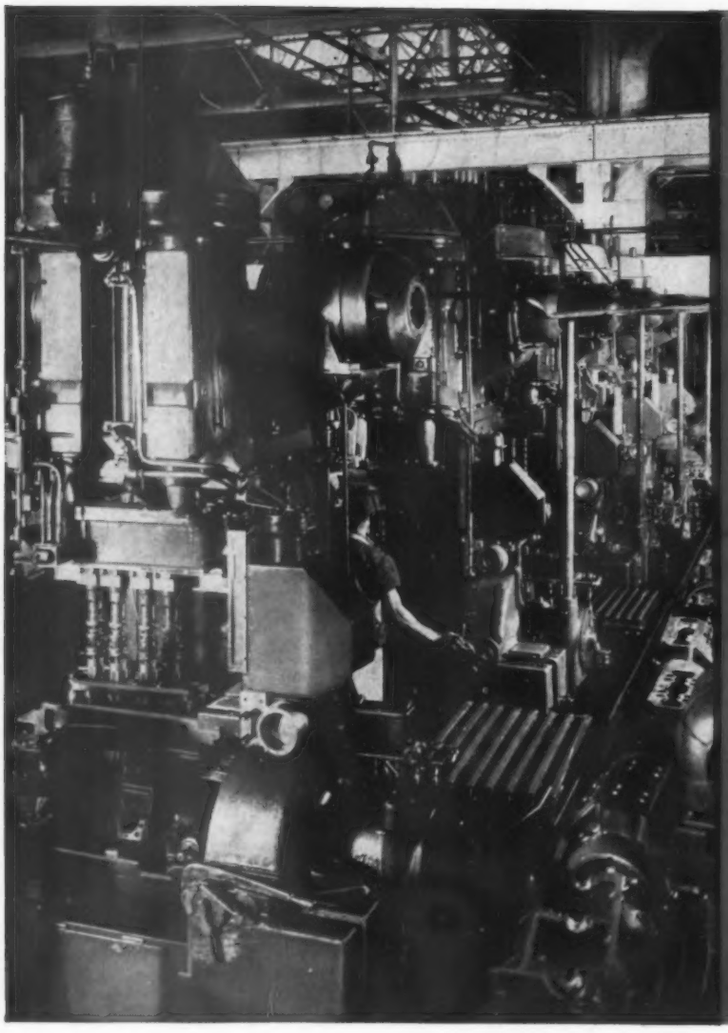


C. M. HEALEY, JR.:
SATISFACTION IN SERVICE

See Page 87

Table of Contents Pages 81-85

A CONOVER-MAST PUBLICATION • 35 CE



Greater Production from Every Machine

NO MATTER what you make, where you are located, or the size of your plant, Texaco Lubricants and specialized Lubrication Engineering Service will help you get greater production—with fewer rejects and lower unit costs. For instance—

Machining operations of every type are vastly improved through the use of *Texaco Cutting and Soluble Oils.* They increase tool life—often double or triple it—improve both quantity and quality of output.

Hydraulic mechanisms operate more dependably with *Texaco Regal Oils* (*R & O*) . . . hydraulic oils that *prevent rust and sludge* . . . used and recommended by leading hydraulic equipment manufacturers.

High-speed ball and roller bearings last longer, cost less to maintain, lubricated with *Texaco Regal Starfak.* It exceeds every test requirement for an ideal anti-friction bearing lubricant.

Enjoy Texaco benefits in your plant. Call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

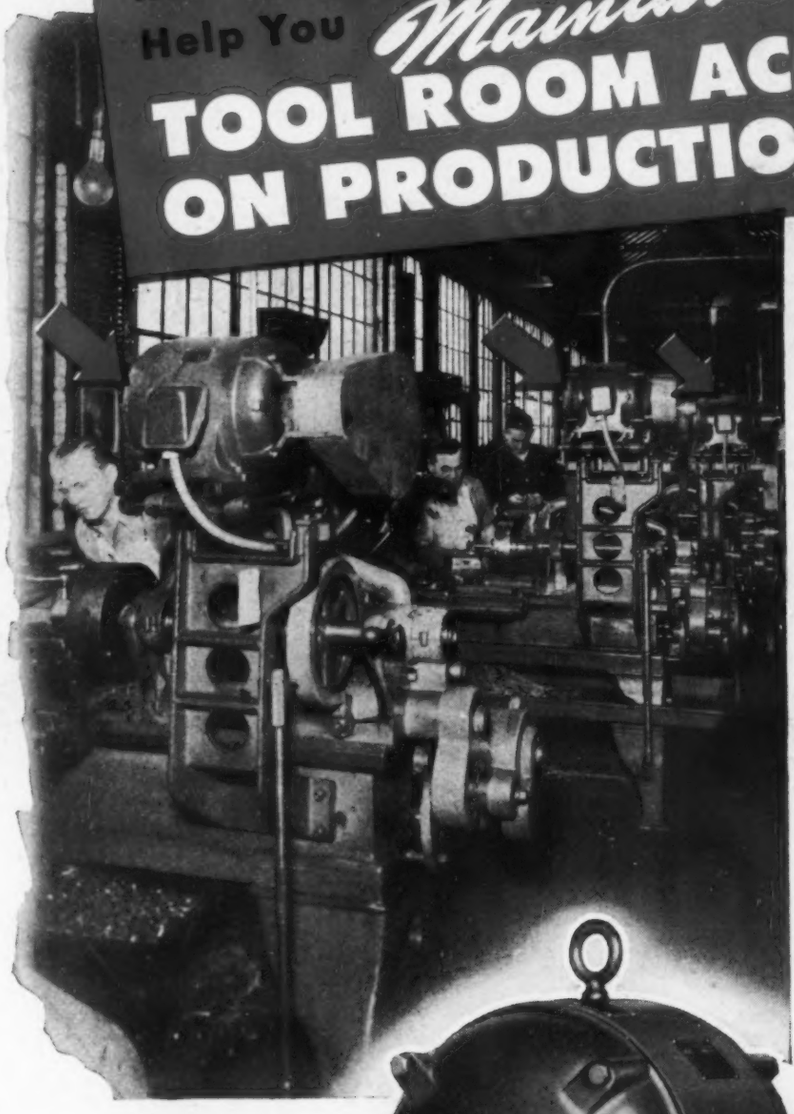
TEXACO

TEXACO Lubricants, Fuels and Lubrication Engineering Service

...in...TEXACO STAR THEATRE presents the NEW EDDIE BRACKEN SHOW every Sunday night. See newspapers for time and station.

CENTURY MOTORS

Remarkable Freedom From Vibration Will Help You *Maintain* TOOL ROOM ACCURACY ON PRODUCTION JOBS



On machine tools of high precision, a Century Motor will help maintain the close tolerances for which the machine was designed. Century motors' smooth operation, with a minimum of vibration means that the driven equipment turns out more accurate production.

Rigid construction, accurately machined feet, permanent alignment, and many other Century features assure top performance during a long motor life, under the toughest operating conditions.

Century motors are built in a wide range of types, in sizes from 1/6 to 400 horsepower to meet the needs of practically every electric power application. They are furnished with open, protected, splashproof, explosion proof or totally enclosed fan cooled frames to meet the requirements of any surrounding atmosphere.

Specify Century motors on all your electrically powered equipment. They are engineered to the functional characteristics of the job to assure top performance.

3 Century Type S C Squirrel Cage, 3-phase motors



Century C MOTORS

CENTURY ELECTRIC COMPANY
1806 Pine Street • Saint Louis 3, Missouri
Offices and Stock Points in Principal Cities

491

PURCHASING, published monthly by Conover-Mast Magazines, Inc. Publication Office, Orange, Conn. Editorial and Executive Offices 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3 for one year, $5 for two years in the U. S. A. Canada and Foreign $4.00. Volume 21, No. 5.

MORE SERVICE FROM RUBBER FOR INDUSTRY



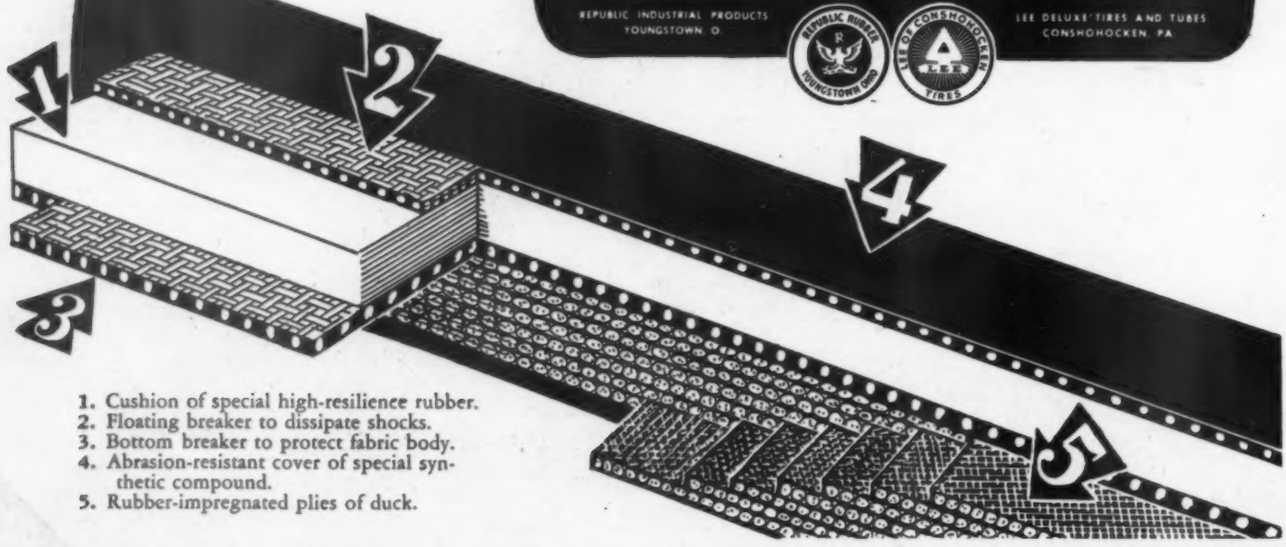
The single enterprise at Republic is making rubber work harder, longer, for industry. The job is approached, primarily, in two ways. One is a program of constant research and product development... the other is a rigid policy of carefully analyzing specific operating conditions before determining the best type of rubber construction, new or long established, to do the job. Typical result in product development is the Republic Shock-Absorber Conveyor Belt. This patented construction has repeatedly solved an expensive problem for industries where other type belts had been literally pounded to pieces under severe impact of falling lump material. Greatly increased operating efficiency on all types of belting and hose employed, following overall service studies by Republic industrial rubber specialists, is a matter of record from coast to coast. A representative of your nearby Republic Distributor is the first man to see.

SHOCK-ABSORBER CONSTRUCTION
PAT. NO. 2,237,173

REPUBLIC RUBBER
DIVISION
LEE RUBBER & TIRE CORPORATION
YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O.

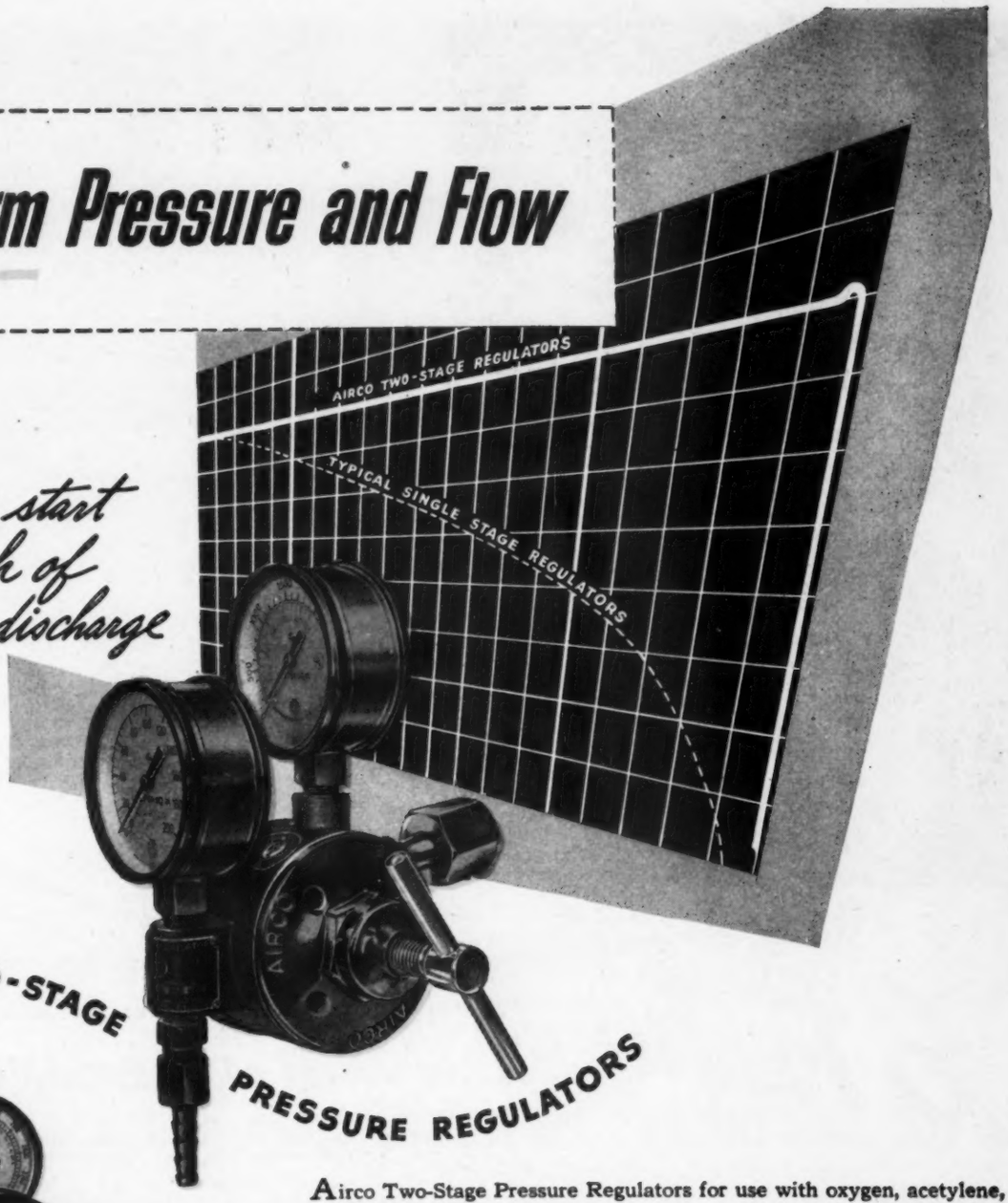
LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA.



1. Cushion of special high-resilience rubber.
2. Floating breaker to dissipate shocks.
3. Bottom breaker to protect fabric body.
4. Abrasion-resistant cover of special synthetic compound.
5. Rubber-impregnated plies of duck.

Uniform Pressure and Flow

...from start to finish of cylinder discharge



AIRCO TWO-STAGE PRESSURE REGULATORS

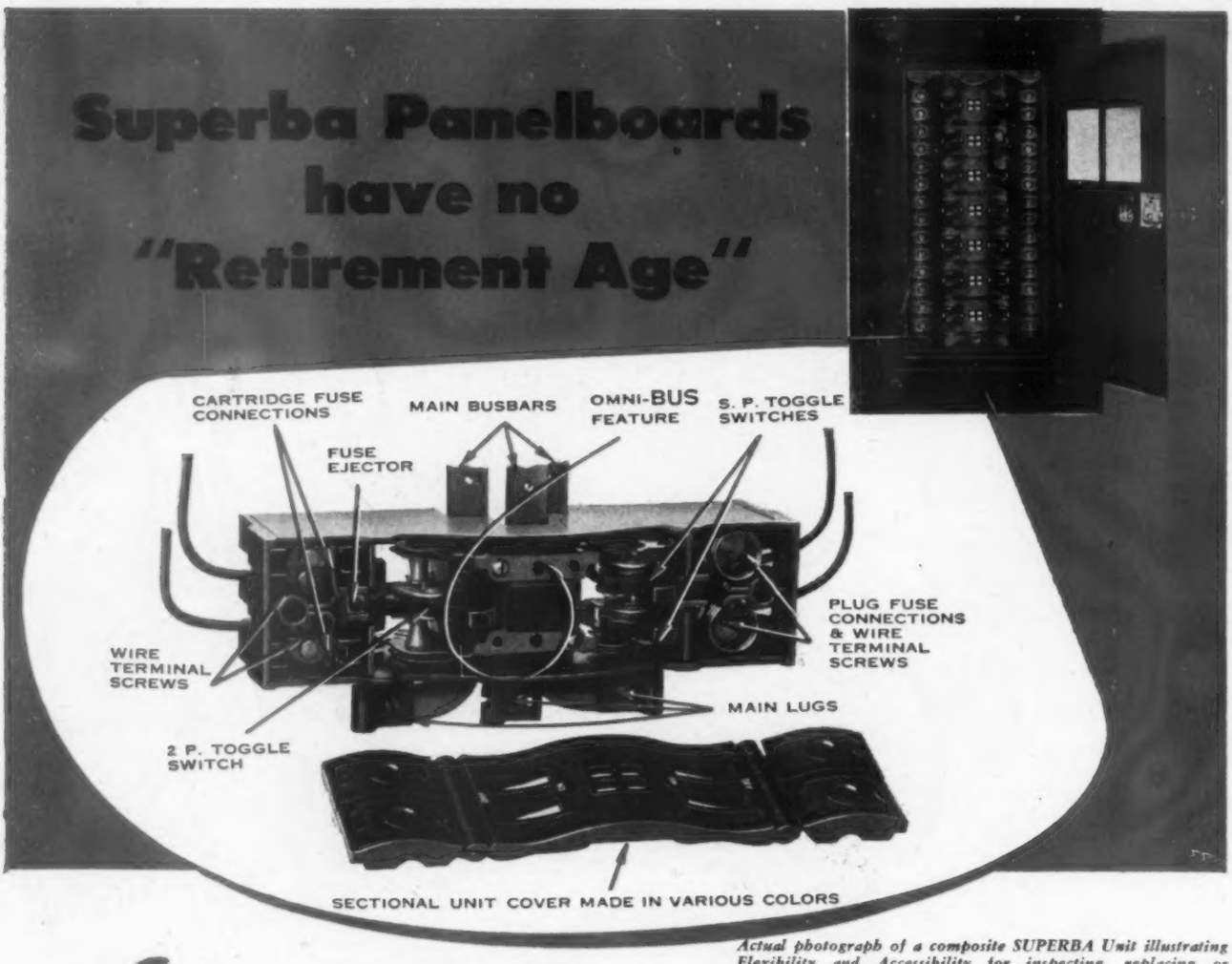


Airco Two-Stage Pressure Regulators for use with oxygen, acetylene, hydrogen, or nitrogen require but *one* adjustment . . . the first. Once set at the correct operating pressure, they deliver a constant, non-fluctuating flow of gas from start to finish of cylinder discharge. Drops in cylinder pressure are automatically compensated for, thus enabling the operator to devote his full attention and skill to the job at all times.

But this is only part of the story of what Airco Two-Stage Regulators can do for you. For full details write for Folder ADC-626. To obtain this folder or information on the complete line of Airco regulators, including units for pipe-line and laboratory service, address:
Air Reduction, General Offices, 60 East 42nd Street, New York 17, N. Y.
In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas.
Represented Internationally by Airco Export Corporation.

AIRCO **AIR REDUCTION**
OFFICES IN ALL PRINCIPAL CITIES

Superba Panelboards have no "Retirement Age"



Actual photograph of a composite SUPERBA Unit illustrating Flexibility and Accessibility for inspecting, replacing or interchanging Toggle Switches, Fuse Connections or Bus Bar arrangements without removing cabinet door or trim.

6 FEATURES ... the secret of adaptability

Many a panelboard has been put out to pasture because it couldn't meet the challenge of changing electrical conditions.

But you need never worry about obsolescence when you install BullDog SUPERBA. There are six separate features of design and construction to insure complete safety, peak performance, unusual convertibility, easy maintenance and long life. Look them over:

1. **Toggle Switches:** Sturdy construction to withstand abuse . . . positive operation . . . quick make and quick break.
2. **Switch and Fuse Safety Interlock:** Doors over fuse compartments are interlocked with toggle switches so that fuses are always "dead" when accessible, although fuses can still be tested in circuit.
3. **Fuse Ejector:** In cartridge fuse type. Just a flip of the finger ejects the cartridge fuse with safety and convenience.
4. **Omni-bus Construction:** Permits ready change of voltage and phase, and balancing of load on the phases, after the panel is installed and without removal of door or trim or disturbing branch circuit wiring.
5. **Isolation Compartments:** Bus bars, fuses and switches are in separate compartments, preventing flash-overs and localizing trouble from short circuits or defective fuses.
6. **Smart Styling:** Surface or face plates of bakelite have a curved design with a variegated grain finish, lending beauty and symmetry to the panel's appearance.

Check these six advantages of SUPERBA Panelboards, and write for complete details on this modern, completely flexible equipment.

SUPERBA is adaptable to any of these systems:

125/250 V. Single Phase AC or DC Edison System.
125/250 V. Grounded Neutral Single Phase AC or DC Edison System.
125/250 V. Grounded Neutral 3 to 3-Wire Single Phase AC or DC Edison System.
120/208 V. 3-Phase, 4-Wire AC.
125 V. 3-Phase to Single Phase AC.
125 V. 2-2 Wire.

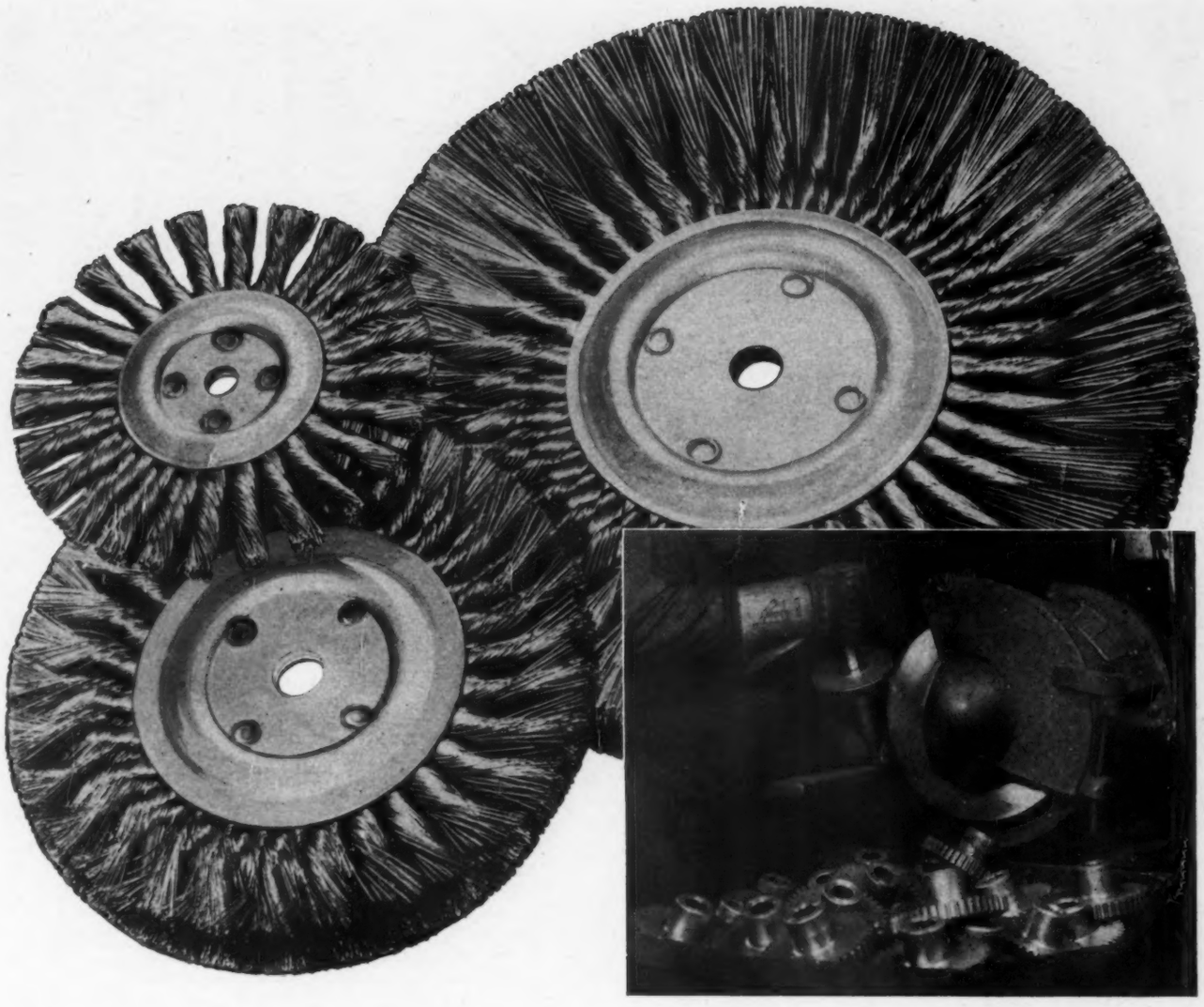
BullDog Also Manufactures Vacu-Break Safety Switches—BUStribution DUCT—Switchboards—Circuit Master Breakers—Industrial Trol-E-Duct for Portable Tools, Cranes and Hoists—Universal Trol-E-Duct for completely flexible lighting.

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ELECTRICAL DISTRIBUTION SYSTEMS

BULLDOG ELECTRIC PRODUCTS COMPANY, DETROIT 32, MICHIGAN

In Canada: BullDog Electric Products, Ltd., Toronto. Field Engineering Offices in All Principal Cities



The "Knot" Brush that Unravels Production Knots ...It's OSBORN'S ORIGINAL DISC CENTER BRUSH!

HERE'S the brush for those rough and rugged finishing jobs that require real cutting power! Osborn originated these famous knot-type sections and has improved them constantly so that today no harder-working, power cleaning tool exists than genuine Osborn Disc Center Sections.

Amazing production records have been set by these brushes, especially in recent years: weld cleaning operations upped 40% . . . metal cleaning costs cut in half . . . tire moulds cleaned five times as fast . . . stayed on the job removing burrs from steel stampings for 130 hours instead of 30—to name just a few.

If you have heavy-duty finishing jobs TODAY such as cleaning welds, removing scale or burrs, preparing large steel surfaces for painting, etc.—Osborn Disc Center Sections can help you do the job better, faster and at a considerably lower unit cost. **DELIVERIES ARE GOOD!**

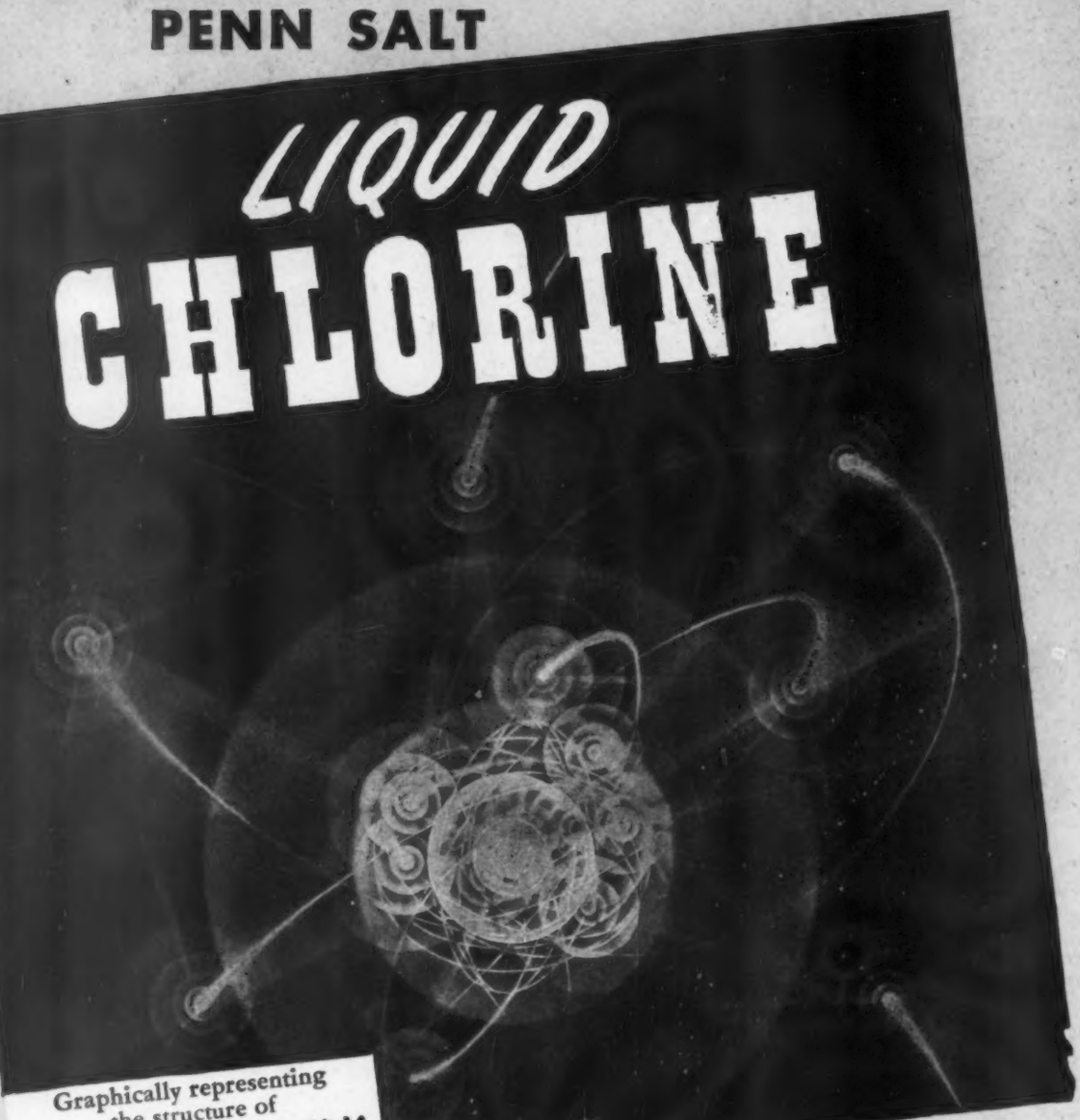
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WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

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LIQUID CHLORINE



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J&L WIRE ROPE

PERMASET PRE-FORMED

A giant reflecting telescope is built with precision. J&L Permaset Pre-formed Wire Rope is also Precisionbilt by men of experience and skill using the finest materials.

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GILMORE WIRE ROPE DIVISION

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J&L *Precisionbilt* PERMASET PRE-FORMED WIRE ROPE

"Brother, they're TOPS in for Non Ferrous Metals!"





Taps

MORSE SPIRAL FLUTED TAPS

are Specially Designed to Produce Clean, Accurate Threads in Aluminum, Magnesium, Zinc, Copper, Brass, and Stringy Metals

Conventional taps are ineffectual in die cast metals and metals of a stringy nature because they leave torn, rough, and damaged threads. *That's why Morse designed its Spiral Fluted Tap.* This tap is made specifically to produce sharp, clean threads in aluminum, magnesium, copper, brass, zinc, etc. . . . threads which have *lasting strength* and permanent *holding power.*

The Morse Spiral Fluted Tap is *free cutting* and, as it works into the metal, it automatically clears the chips from the hole, thereby eliminating clogged grooves.

Remember that, besides Special Purpose Taps, the wide Morse Line can provide you with a tap, standard or special, to suit precisely, for maximum effectiveness, whatever metal your production specifications call for — from magnesium to stainless steel. Morse engineers and your Morse distributor are ready to help you choose the *right* tap for *your* job.

Accuracy, Quality, Uniformity: the MORSE Code of Cutting-Tool Manufacture

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The Original Manufacturer of Twist Drills

NEW BEDFORD, MASSACHUSETTS



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"Feather out" YOUR WELDS—
FASTER . . . NEATER WITH . . . . P&H
DH-2
(Class AWS-ASTM E6020)

DH-2 is an improved P&H Electrode, carrying a famous old name. It's a completely redeveloped electrode, tested and proved — made better in every way.

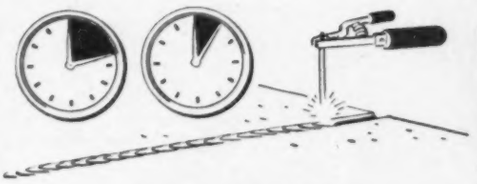
DH-2 weld deposit "feathers out" — for better, neater welds. It's fast! For example, in competitive tests, a prominent manufacturer of giant presses deposited *1½ pounds more metal per hour* than with other electrodes of the E6020 class.

DH-2 out-performs on all flat butt and horizontal fillet work — produces excellent results on all mild and medium carbon steels — without porosity. It's for AC or DC. Welds are machinable as deposited or heat treated.

Prove to yourself DH-2 can give you swifter, better appearing welds. Try it on your work. Call your P&H Distributor today or write for complete information.

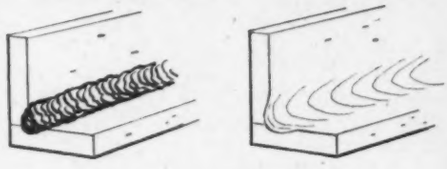
FOR HIGH SPEED, HIGH QUALITY WELDING

—USE DH-2



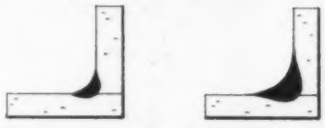
GREATER SPEED

DH-2 is a really fast electrode — for more pounds of deposit per hour, less welding cost. It's easy to handle with minimum spatter loss.



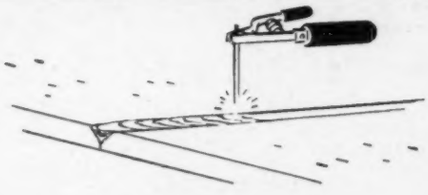
BETTER APPEARANCE

Weld metal "feathers out" — neat and uniform. It eliminates notched effect along weld edge — improves product appearance.



MEDIUM OR DEEP PENETRATION

If you desire medium penetration, you weld at normal amperages. You get deep penetration at high amperages.



FOR DOWNHAND

DH-2 is a "specialist" — designed specifically for horizontal, flat fillet and groove welding — proved the country over.

"SM"	"FR"	"CM-5O"	"FW"	"AC-3"	"PF"	"AC-1"	"AP"
AWS E-6013	AWS E-6012	AWS E-7011	AWS E-6020	AWS E-6013	AWS E-6012	AWS E-6011	AWS E-6010

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SEE P&H—FOR ALL ELECTRODE REQUIREMENTS

DH-2 is one of many types of P&H electrodes which meet every welding need. Above are just a few of the complete P&H mild steel group. Ask for complete line booklet R-7.

AMERICA'S MOST COMPLETE ARC WELDING SERVICE



DC WELDERS



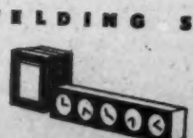
AC WELDERS



WELDING ELECTRODES



WELDING POSITIONERS



WELDING PRODUCTION CONTROL SYSTEMS



ELECTRIC HOISTS



☐ **1. GRINDING METHODS MANUAL** — "Here's How" is title of Dunmore Company's manual of the newest techniques in grinding. It explains how Dunmore grinding unit mounted on lathe, milling machine or other basic tools does all five grinding jobs — internal, external, thread, surface and tool grinding. Manual explains how to simplify grinding problems and cut costs.

☐ **2. GRINDING WHEELS, ETC.**—64 pages of illustrations of wheels and other equipment, many in actual size and color, are included in new catalog offered by Chicago Wheel & Mfg. Co. Mounted and grinding wheels in all grades, grains, shapes and sizes, tool and cutter wheels, cups, etc. are covered.

☐ **3. ADHESIVE SAMPLES**—Clip this item and indicate what samples of Mystik Adhesive Products Co.'s tape you would like to have: cloth tape, water-proof cloth tape mask, spra-mask, sand blast, paper masking tape, dri-pipe, and Mystik-Print for labels and signs. All are yours for the asking. Included with samples is booklet, "Methods by Mystik," that will show you possibilities for substantial cost cuts in your plant.

☐ **4. SIMPLIFIED PAPER WORK** — A. B. Dick Co. folder tells about a new method for faster production and simpler control of factory paper work, systems, routines and methods with Mimeographed die-impressed stencils. It is information you will want if you're interested in one-writing paper system, and eliminating need for large quantities of forms.

☐ **5. V-TYPE PACKINGS**—Palmetto Pyramid, all-purpose molded "Vee" type packing said to seal completely with simple finger-tightening and to be completely automatic in performance, is described in new Greene, Tweed & Co. bulletin. Lubricant reservoir is said to result in longer packing and equipment life.

☐ **6. LOCK WASHERS**—New facts, specifications, recommendations you will want to know about lock washers are included in George K. Garrett Co., Inc. book, "How . . . Why and Where of Lock Washers." Check No. 6 for your copy.

☐ **7. BUSHINGS & BEARINGS** — A reference book on Foremetal bushings and bearings for Purchasing Agents and engineers is offered by National Formetal Co. It will provide visual check of your needs against the wide range of bushings and bearings illustrated. And it explains how Formetal gives better performance value. Advise if you want samples.

☐ **8. WELDING FITTINGS** — Tube-Turn stainless steel welding fittings, including 45°, 90° and 180° elbows, tees, caps, reducers and lap joint stub ends, are covered in new bulletin issued by Tube Turns, Inc.

☐ **9. DUPLEX TUBING**—Revised edition of Duplex Tubing Technical Bulletin is offered by Bridgeport Brass Co. Duplex tubing, made of copper to the water-side and low-carbon steel to the ammonia-side, is recommended for double corrosion and taste and color contamination prevention. Bulletin shows methods of installation.

☐ **10. FUSETRONS**—Printed matter describes double protection against motor burnouts from overloads or single phasing made possible by Fusetrons. Maker states they wipe out needless blows, give thermal protection to panelboards and switches, permit use of larger motors or adding more motors on circuit, provide double burnout protection for large motors, and make protection of small motors simple and inexpensive. Bussman Mfg. Co.

☐ **11. EXPANDING ARBORS**—"Auto-Arb" expanding arbor, claimed to permit chucking and unchucking without stopping spindle, is subject of new Asco Corp. bulletin. Auto-Arb is recommended for holding workpiece by inside diameter while machining entire or portion of outside surface, after blanking. It works with any standard collet and can also be used on drill presses or milling machines in conjunction with collet devices.

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
Four Pages — 14 - 16 - 19 - 20
Use convenient prepaid postcards on pages 19 & 20

☐ **12. THINSTRIP MAGNESIUM**—Facts at your fingertips on Thinstrip magnesium are given in Burgess Battery Co. booklet on the subject. Thinstrip magnesium is described as a commercially pure magnesium produced in coil-strip form in gauges as thin as .005" up to .010"; and in 5" width which can be slit down to ¾". Fabrication and advantages of Thinstrip are explained along with thumbnail description of magnesium metal.

☐ **13. HYDRAULIC POWER UNITS**—Ten-page brochure on Hymac hydraulic power units that may be adapted to any motion desired for new machines or for change-over to hydraulics is available from Hydraulic Machinery, Inc. Illustrated are units that have been adapted to grinding, milling, boring, drilling, pressing, piercing, riveting, etc.

☐ **14. SMALL, HIGH PRESSURE PUMPS**—Catalog D-446 covers Type ES, small, high pressure pumps for pressures up to 200# psi. Pumps are recommended for small boiler feed units in cleaning and dying plants, laundries, canneries, hydraulic press applications, pressure fluid seals, etc. Economy Pumps, Inc.

☐ **15. RECORD SYSTEMS**—Tested methods and equipment for better record management and protection are sure to interest every P. A. Diebold, Inc.'s catalog AL-1779 describes Rotor record keeping, Reveldex, Tra-Dex vertical visible files, visible binders, storage files, safes, etc. Section on microfilming process is included.

☐ **16. RUSTPROOFING** — Latest technical data service sheets from American Chemical Paint Co. give you a quick reference list of rust proofing chemicals, protective coatings, metal cleaning chemicals and inhibitors, as well as details on cold spray Granodine (phosphate coating process) and Alodine (rust proofing process for aluminum and its alloys). Reference list has metal and process index. Check #16 for all three bulletins.

☐ **17. DIESEL ENGINES** — Bulletin B-1, (rev). 48 pages, on Diesel engines and their lubrication is offered by Sun Oil Co. It gives 48 pages of facts on the history and development of diesels, the fundamentals of diesel design, etc. Viscosity-temperature charts, lubricating oil recommendations, oil-reclaiming equipment are all explained. A trouble shooting chart and a section on maintenance and operation of diesel engines are included.

☐ **18. RESISTANCE WELDING** — Innovations in General Electric's line of sequence and sequence-weld timers for resistance welding are subject of Bulletin GEA 3318B. Advantages claimed for redesigned line include quick change of welding sequence, easy inspection and maintenance, and remote operation. Electronic timing circuit makes possible the consistent welding speed essential to high-production welding with short timing intervals.

☐ **19. DEMINERALIZERS**—Line of 4 package unit demineralizers for providing industrially pure water at a fraction of distillation costs are detailed in Cochrane Corp. publication 4266. Units are designed for plug-in operation from any 110v 60 cycle source.

☐ **20. CONDENSATE DRAINAGE** — A draining condensate from process equipment, returning it to boiler under high

(*Continued on page* 16)

Have you found it hard to obtain Swiss Pattern files?

JUST SAY "X.F." and get them



X. F. means Extra Fine and is part of the trade-mark which distinguishes the Swiss Pattern files made by Nicholson and sold in greater quantities than any other Swiss or Swiss Type brand.

These widely preferred Swiss Pattern files are now again available in nearly all catalogued kinds. Simply acquaint your Industrial Distributor as to your needs.

Nicholson X.F. Swiss Pattern Files are made for every one who does extra-fine filing: for tool and die makers, delicate instrument-parts finishers, model makers—precision craftsmen in general.

More exacting measurements —smaller points and longer tapers . . . these are features that distinguish X.F. Swiss Pattern Files from American Pattern. Highest quality—uniformity in each detail of manufacture—and the sweeping guarantee of Twelve perfect files in every dozen . . . these are factors that make them the first choice of most precision-file users.

NICHOLSON U.S.A.

NICHOLSON FILE CO.
28 Acorn Street, Providence 1, R. I.
(In Canada, Port Hope, Ont.)

BLACK DIAMOND TRADE MARK

NICHOLSON FILES *FOR EVERY PURPOSE*



(*Continued from page* 14)

pressure with maximum heat economy is explained in Cochrane Corp.'s publication No. 3250. Diagramatic drawings detail system. Specifications and selection chart included.

☐ **21. VERTICAL MOTOR**—Protected-type motors for close coupling to centrifugal pumps, agitators, atomizers and many types of machine tools are described in new bulletin SL-300-3 issued by Crocker-Wheeler Electric Mfg. Co. Drawings and dimensions of the Nema "B" flange and Nema "C" face mountings are shown in frame sizes up to and including 326.

☐ **22. AUTOMOTIVE BRAKES**—New 22-page service manual HU-277 includes general service instructions and maintenance suggestions for the new Wagner Electric Corp. Lockheed self-centering, self-adjusting hydraulic brake. Sketches illustrate operating principles, servicing procedure.

☐ **23. PROCESS MEASUREMENTS**—Pneumatic transmission of instrument readings over long distances is covered in technical bulletin No. B59-2, issued by Brown Instrument Co. Bulletin outlines to what limits readings may be transmitted and makes definite recommendations as to optimum connecting tubing sizes for various distances. Report is based on actual test data.

☐ **24. WELDING ALUMINUM**—An 88-page book, "Welding Aluminum", is available from the Reynolds Metals Co. It gives the latest practices and recommendations for joining aluminum by gas, arc and resistance welding, brazing and soldering.

☐ **25. CORTEN** — Corten is a tonnage grade of steel possessing relatively high strength and superior resistance to atmospheric corrosion, combined with good workability, weldability and resistance to abrasion, impact and fatigue. 68-page booklet available from United States Steel Corporation.

☐ **26. BRONZE ELECTRODE**—Bulletin W-9 describes Ampco Metal's shielded arc a-c, d-c bronze electrode. They are said to produce smooth bead contours, dense deposits, along with low spatter loss and high efficiency. Ampco Metal, Inc.

☐ **27. LACQUER RESIN** — Printed matter and trial sample of Cellolyn 102, new, lower cost lacquer resin said to be suitable for practically any lacquer formulation where rosin maleates have been previously used, are available from the Hercules Powder Company.

☐ **28. MAGNETIC PLUGS**—Recommended for more effective lubrication, these plugs are described in booklet issued by Lisle Corporation. They are built like a regular drain or fill plug, a powerful magnet being imbedded therein in direct contact with the oil. Magnet is said to remove iron and steel particles from lubricant as fast as they are ground from moving parts.

☐ **29. HYDRAULIC PRESSES**—Bulletin of 8 pages describes Air-Hydraulic presses having ram pressure controlled up to 5000 lbs. and adjustable stroke of 1/16" to 5", and adjustable ram speed. Air Hydraulics, Inc.

☐ **30. EXPANSION JOINTS** — Magnilastic expansion joints covering wide field of application involving transmission of steam, oil, gas, diesel exhaust, acid and corrosive chemicals, are described in bulletin "Packless Expansion Joints" available from MagniLastic Division of Cook Electric Co. Standard pipe sizes ½ to 24". Joints do not require reinforcing rings or guide rods.

☐ **31. INDUSTRIAL HOSES**—Suction hose for excavating and general utility services, and various brands of industrial water hose are described in catalog sections issued by B. F. Goodrich Co. Suction hose is recommended for any degree of suction and for discharge pressures up to 30 lbs psi.

☐ **32. MICARTA BEARINGS**—Application data, installation information, and other data are contained in new 11-page booklet announced by Westinghouse Electric Corp. Increased power savings, fewer adjustments and other factors are described. Booklet B-3776.

☐ **33. RAYON CORD TIRES**—"The Record of Rayon Cord in Tires", based on laboratory tests, is subject of booklet issued by American Viscose Corporation. Tire performance is analyzed in non-technical terms. Booklet also cites experience performance of large users.

☐ **34. FLEXO PIPE JOINTS**—These joints are for use wherever a flexible or swing pipe joint is required for conveying steam, compressed air, water, oil, and other fluids under high or low pressure. They may also be used on suction lines. Bulletin describes them in detail. Flexo Supply Co., Inc.

☐ **35. ROTARY FILES** — "Choosing and Using Rotary Files" is subject of bulletin R-116 issued by the Nicholson File Co., covering Ground Burs, both High Speed Steel and Cemented Carbide, as well as Hand Cut Rotary files.

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☐ **36. ROTATING ELECTRICAL EQUIPMENT**—Catalog 46-1, 8 pages, describes products made by Electric Specialty Co. Included in general descriptions are a-c, d-c, and universal motors for applications not met by standard motors; dynamotors and converters; motor generator sets; a-c and d-c generators; and gas and diesel electric generating plants.

☐ **37. INDUSTRIAL LIGHTING** — Bulletin 30-A on industrial fixtures covers the Day-Line of fluorescent units made by the DayBrite Lighting, Inc. Table shows foot-candle intensities.

☐ **38. PROTECTIVE COATINGS** — Eight-page bulletin gives complete information in condensed form about Amercoat line of protective coatings designed to prevent contamination and corrosion in various industries. Chart is ready guide for selecting proper coating, etc. Amercoat Div., American Pipe & Construction Co.

☐ **39. PIPE & FITTING MATERIALS**—Chart of Pipe and Fitting Materials is available from Tube Turns. It deals with carbon, intermediate alloy, stainless and special analysis steels, and covers ASTM specifications, chemistry, etc. Chart folds to 8½" x 11" for letter size files, or may be kept in ring binder.

☐ **40. NON-METALLIC Basic Materials**—Bulletin GF 41 describes Diamond vulcanized fibre, Dilecto laminate, Vulcoid, a C-D dielectric material, Celoron, fabric base molded plastic, Micabond, and Dilectene insulation. Central Diamond Fibre Co.

☐ **41. CEMENTED CARBIDE Products** — Catalog 46, 56 pages, gives complete information on Kennametal cemented carbide products, including chart of materials machined, and information on "How to Select and Order." Interesting index in chart form illustrates the various products from straight turning tools to blanks, rolls, bearings, etc. Several new products are described. Kennametal Inc.

☐ **42. MICROMETERS**—Eight page bulletin describes the George Scherr Company's micrometers. The 1, 2, and 3-inch sizes have ten thousandths inch vernier. Line includes outside models in sizes from 0 to 6", inside and depth micrometers, and sets in both English reading and metric types.

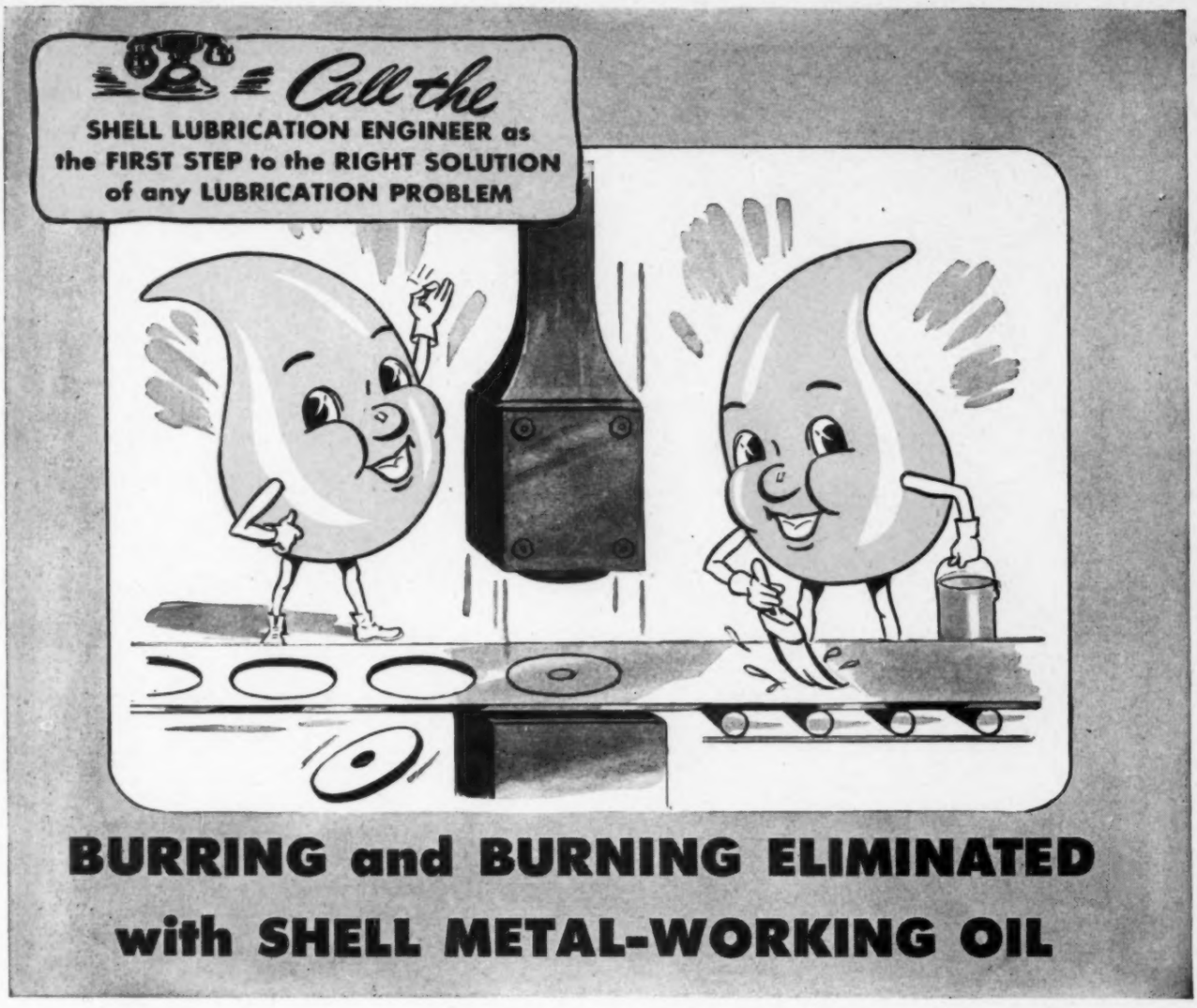
☐ **43. MULTIWALL PAPER BAGS**—Interesting comparative case history of use of multiwall paper bags as between 200 lb. barrels, 150 lb. jute bags, and 100 lb. paper bags features six-page bulletin available from the St. Regis Paper Co.

☐ **44. FORK TRUCK** — Bulletin describes Automatic Model L-4 center-control electric fork truck; capacity 4000 lbs; telescopic, tilting, tiering. Automatic Transportation Co.

☐ **45. MATERIALS HANDLING** — Bulletin entitled "Handling Methods" describes roller-wheel conveyors, portable conveyors (Rapid Power Boosters), The Floor-Veyor for floor to floor handling, and the portable endless belt Press-Veyor with two-wheel wide base. Rapids Standard Company.

☐ **46. TOOL & DIE STEELS**—Bulletin 046 describes Kropp Forge Specification Tool and Die Steels, available in bars of all shapes, molds, dies and forgings. The bulletin gives complete particulars on each of the 5 special steels listed.

(*Continued on page* 19)



PROBLEM: Stainless-steel strip, 3" wide, ¼" thick (Type 4 SAE-51710), was used for simultaneous blanking and piercing butterfly valve parts with a mechanical-ram, sheet-metal press at the rate of 120 blanks per minute. *Unlubricated strip produced badly burred blanks—die was dangerously overheated.* Slower speed would solve heat problem but not burring.

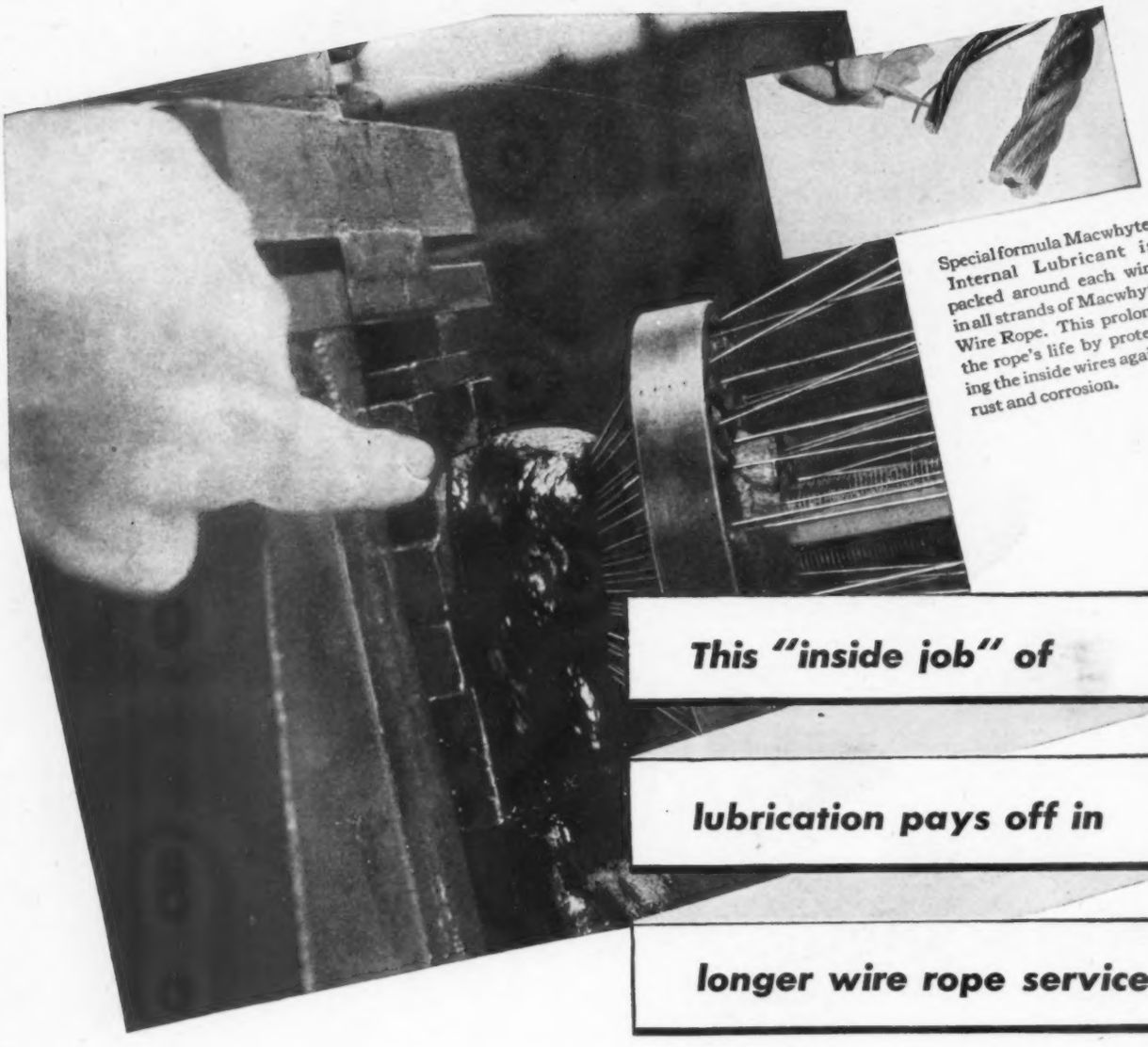
SOLUTION: When the Shell Lubrication Engineer surveyed the problem he recommended a Shell Garia Oil. This was applied with a paint brush to the top of the strip, just ahead of the stamping. All burring and overheating ceased. Manufacturer completed 60,000 valve parts, at the rate scheduled, without renewing dies.

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. Write for informative literature on Shell Metal-Working Oils. Shell Oil Company, Incorporated, 50 W. 50th St., New York 20, N. Y. or 100 Bush St., San Francisco 6, Cal.

SHELL METAL-WORKING OILS

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This "inside job" of lubrication pays off in longer wire rope service

Because it's thoroughly lubricated *on the inside,* Macwhyte Wire Rope lasts longer on your equipment. Our heavy, tenacious, special formula lubricant gives long-lasting protection. It is force-fed to wires as they are being closed into the strand. All wires, both inside and outside, are thoroughly encased in lubricant.

Macwhyte Internal Lubricant improves the sliding action of the wires as they move in bending around sheaves and drums. It gives outside protection—but even more important, it protects the unseen inside wires which constitute the reserve strength and safety of the rope.

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Make MACWHYTE your headquarters for WIRE ROPE AND SLINGS



(*Continued from page* 16)

☐ **47. CONDUIT**—Therm-O-Tile, permanent conduit for underground pipe lines is described in bulletin issued by the H. W. Porter Co. Efficiency is said to be permanently high. Insulation is surrounded by air, and is always kept dry.

☐ **48. RUST CONTROL** — "Rust-Oleum Stops and Prevents Rust" is title of booklet issued by Rust-Oleum Corp., describing preventive products for industrial, railroad, marine and general uses. Color cards indicate colors in which products are available.

☐ **49. COOLANTS**—Twenty-page manual issued by Oakite Products, Inc., describes Oakite Soluble Oil for machining, cutting, grinding and related operations on ferrous and non-ferrous metals, and addition agents for special operations.

☐ **50. DUST COLLECTORS** — Schneible Senior Multi-Wash dust collectors are discussed in 6-page bulletin No. 143 issued by the Claude B. Schneible Co. Dust and fumes are washed from the air by scrubbing with cyclonic sprays and impingement plates. There are no filters or screens, electrical equipment or moving parts. Equipment for de-watering sludge is also described.

☐ **51. PYROMETERS**—Alnor Series A pyrometers for use on air preheaters, superheaters, heat treating furnaces, oil quenching tanks, cyanide pots, diesel engines, die casting machines, condensers and similar equipment are described in bulletin 4067 released by Illinois Testing Laboratories, Inc.

☐ **52. GYRATING SCREENS**—Screens for fine screening and dewatering in various process industries are described in Bulletin No. 4 which gives details regarding a number of different installations, issued by the Simplicity Engineering Co.

☐ **53. POTENTIOMETERS** — Electronik strip chart potentiometers are described in Catalog 15-8 issued by the Brown Instrument Co. Units employ the Brown "Continuous Balance"—an electronic detector which is said to make possible full advantage of thermocouple responsiveness, unprecedented sensitivity, ruggedness and simplicity.

☐ **54. PACKING**—Hydraulic and Pneumatic Leather Packing Guide has just been issued by Alexander Bros. Data covered includes usage, types, sizes, tables, etc., for Cup, Vee, Flange and U packings. Three different tannages enable choice of leathers to take care of any leather packing requirement, it is stated.

☐ **55. ROSIN RUBBER** — Potentialities of "Rosin Rubber" in manufacture of tires and other rubber goods are indicated in new booklet on rosin rubber, the story of Hercules Dresinate 731, just released by Hercules Powder Co. Booklet explains the merits of GR-S-10, the first rosin rubber, over GR-S recipes utilizing fatty acid soaps. These include higher tensile strengths, greater elongation, superior tear resistance, and better hysteresis properties. Non-discoloring modifications of rosin rubber are said to possess better over-all physical properties than comparable stocks of regular GR-S, the compounds being of practical value in light colored and white rubber goods.

☐ **56. TURNING MACHINES** — 36 Page Booklet, No. 1701, covers new Uni-Matic lathe, the first of several new postwar automatic turning machines produced by The Monarch Machine Tool Co.

☐ **57. RETAINING RINGS** — Data sheets and specification charts, together with samples of new "E" shaped retaining rings for small shafts are available from the Truarc Sales Division, Waldes Kohinoor, Inc. Providing unusually large and uniformly protruding shoulders on shafts of 3/32" diameter and over, the new ring sprung into a comparatively deep groove is designed to withstand considerable thrust loads.

☐ **58. SILICONE RESINS**—Here's another addition for your file on silicones. Dow Chemical Company has issued New Product Notes on DC 804, a new silicone resin for formulating heat resistant paints. It is especially indicated for use in formulating white finishes having properties between those of ceramic coatings and ordinary organic paints. Finishes do not become yellow or chalky with age.

☐ **59. PUMPS** — Bulletin 241 describes Warren 4 and 6 stage, Type TM pumps; capacity 40 to 750 gpm; 700 to 1600 total head; available in 1½", 2", 2½" and 3" discharge sizes, for boiler feed and other high pressure services. Warren Steam Pump Co.

☐ **60. POST HOLE DRILL**—Bulletin 746 describes the Williams Post Hole Drill, for drilling transmission line pole holes. Drill lowered clears cab of late model trucks and meets state highway underpass regulations. It requires a minimum of 1½ ton dual wheel truck for mounting. Maker states that due to its "power crowd", earth, hardpan, caliche, gravel, shale and soft laminated rocks may be drilled easily and efficiently. Hugh B. Williams Machine Shop.

☐ **61. CIRCULAR STENCILS**—Circular describes the Marsh Circular Feed for models R-S-H stencil machines. Just as easy to operate as cutting straight stencil. Letters are spaced automatically and evenly. Cuts circles with outside diameter of letters 20", 17", 14" and 11". Marsh Stencil Machine Co.

☐ **62. DIESEL ENGINES** — Worthington Type DH Diesel engines—oil, gas, dual fuel, are described in Bulletin S-500-B42A. Color diagram shows construction details. Worthington Pump & Machinery Corp.

☐ **63. INDUCTION MOTOR**—Bulletin 720 describes the Louis Allis Company's protected type standard squirrel cage induction motor. It covers construction, special features, and shows typical applications.

☐ **64. ELECTRICAL CONNECTORS** — Gorilla Grip electrical connectors are detailed in 12-page booklet No. 466 issued by National Electric Products Corp. Booklet was compiled to give industrial purchasing agents, engineers, jobbers and others an exact understanding of the design and function of these connectors. Connectors and terminal units are available for sizes 2000 MCM to #2 stranted inclusive.

☐ **65. PRECISION CASTINGS** — Advantages of precision castings in the handling of materials difficult to machine or forge are told in bulletin 19B6451 released by Allis-Chalmers Mfg. Co. which now employs two individual methods in this process—namely, the "lost wax" and a plaster molding process. Every type of metal can be cast except magnesium alloys.

(*Continued on page* 20)

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CITY..... Zone..... STATE.....



(*Continued from page* 19)

Tolerances can be held from .003 to .008 per inch, plus or minus.

☐ **66. COLD FINISHED Steel Bars**—Bulletin available from Monarch Steel Co. describes Speed Case and Speed Treat Cold Finished Steel bars, describing qualities and giving application studies.

☐ **67. ENCLOSED MOTOR**—Bulletin GEA 4400 describes new double wall Tri-Clad totally enclosed induction motors, 1 to 1000 hp, designed for applications amid dust, metal filing, coolants or corrosive agents, or extra-wet locations. General Electric Co. Apparatus Dept.

☐ **68. HAND TOOLS**—Catalog describes the Wm. Schollhorn Company's line of hand tools—pliers, cutting nippers, metal snips, punches, etc.

☐ **69. FLOOR RUNNER**—Free sample of Bird rubberlike runner that is said to be ideal for factories, offices, etc., which hugs any surface without cementing and which won't curl at the edges, is available from Bird & Son, Inc. It is said to be non-skid even when wet.

☐ **70. WOOD SCREWS**—Samples of Twinfast twin thread wood screws will be sent to you by The Blake & Johnson Company. These screws are said to make for faster production and sounder construction, —tighter seating and greater holding power.

☐ **71. HOISTS** — Ratchet lever hoists and load binders are described in Bulletin RL-1 issued by Coffing Hoist Co. Maker says hoists cannot slip or drop load. Hoists are light in weight—¾ ton hoist weighs 14 lbs; 15 ton hoist weighs 150 lbs.

☐ **72. FLOOR TREATMENTS**—Bulletin describes the numerous floor treatment specialties for treating or surfacing wood, concrete, rubber, asphalt and other type floors. The line includes cleaners, fillers, surfacers, finishers, etc. Cleaners and accessories are also described. Continental Car-na-var Corporation.

☐ **73. PRESSES**—Bulletin 370-C, new release with specifications explains the construction and work features of Watson-Stillman Company's general purpose presses, 20 to 200 ton capacities, designed to handle diversified metal working and plastic molding operations. Machines are suitable for short-run jobs where length of run does not justify setting-up or buying single purpose machine.

☐ **74. TEMPERATURE CONTROL** — Bulletin covers Xactline straight line temperature control for tempering-drawing, isothermal quenching, Al and Mg treatment, heat treating, sintering, metallic baths, plastic molding, and other applications. It operates on any type of electrically heated furnace, oven or other industrial equipment employing a millivoltmeter or potentiometer, and also on gas-fired furnaces equipped with solenoid-controlled air valves or motor controlled valves. Claud S. Gordon Co.

☐ **75. AIR-HYDRAULIC PRESSES**—Maker states that the Air Hydraulic press "does kick and arbor press operations better." Bulletin illustrates the many different jobs that can be done in forming, flanging, marking, assembly, riveting, broaching, crimping, staking and heat sealing. Air-Hydraulics, Inc.

☐ **76. TUBING HEAD** — Bulletin 327 describes National Supply Company's Type W tubing head an extremely flexible unit designed to support a string of tubing and to seal that string from casing. It is available for working pressures from 1000 through 3000 pounds psi. Applications illustrated. By use of adapter flanges it can be used with type 'B' well head equipment.

☐ **77. CONDENSER TUBES** — That is the title of brochure issued by Wolverine Tube Divn. of Calumet & Hecla Consolidated Copper Co. Tables aid in selection of most efficient materials for specific installations. Two pages are devoted to estimating data covering tube sizes from ⅝" to 2" OD.

☐ **78. SILICONE FLUIDS**—Silicone fluids DC 702 and DC 703, for use in high vacuum diffusion pumps, are explained in new Dow Corning Corp. notebook. These diffusion pump oils are claimed to produce vacua ranging up to 5×10^{-8}, yet able to withstand exposure to air and moisture at operating temperatures without appreciable decomposition.

☐ **79. PIPE TOOLS**—New catalog of four pages covers the Beaver line of pipe tools —pipe and bolt machine, ratchets, threaders, cutters, vices, etc. Beaver Pipe Tools.

☐ **80. ¼" CONTROL VALVE**—Bulletin describes Unite Jr ¼" control valves for tubing and light piping installations, made by the Hanna Engineering Works. Company states that it provides easy positive control of air and hydraulic equipment.

☐ **81. COATING for Aluminum**—Technical Service Data Sheet No. 7-16-100-2 describes Alodine chemicals and non-electrolytic process for producing a protective, skin-like coating on aluminum and its alloys. Coatings are said to be thin and tight, increase resistance to abrasion and corrosion, and also provide an adhesive bond and protective base for organic finishes such as paint, wax, and adhesives. American Chemical Paint Co.

☐ **82. SAFETY TREADS**—Wooster safety treads for stairs, ramps, floor areas, platforms and elevators are described in Catalog 45 published by Wooster Products, Inc. Two new products are described: (1) Wooster Cast Window Sills, and (2) Wooster All Steel Safe Groove Tread, a complete structural unit for stairs. Wooster Products, Inc.

☐ **83. WELDING EQUIPMENT**—Catalog ADW-53 describes Bumblebee A.C. arc welders. They are said to provide quality welding faster, better, and at lower maintenance and operating costs. 300 and 500 ampere sizes. Air Reduction.

☐ **84. DISPLACEMENT PUMPS**—New bulletin on "Streamflow" Rotex Pumps, rotary type positive displacement pumps used for moderate or low viscosity liquids under medium pressure, is available from The Quimby Pump Divn. of H. K. Porter Co. Pumps can be used for pumping lubricating, non-lubricating and viscous liquids. Folder contains specifications, dimensions and performance charts.

☐ **85. DRY ICE**—Illustrated 32-page booklet describing the manufacture, distribution and use of dry ice is available from The Mathieson Alkali Works. Charts estimate amounts of dry ice required for refrigeration units of different sizes. Table shows temperatures required for protection of various food products.

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70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85

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Two ways to look for value in Fluorescent Lamps





1 **One way** would be to get yourself a battery of testing devices like the one above. General Electric lamp scientists developed this shadow box to check on the double coiled tungsten wire that goes into G-E fluorescent lamp cathodes. It helps to eliminate defects that might reduce the life or cause end-blackening in the General Electric fluorescent lamps you buy. But of course, you'd have to make hundreds of other tests besides, to make really sure of getting top value. Just to develop the instruments to make these tests would take years of research and millions of dollars. But since General Electric already is doing all these things, the quick way to look for fluorescent lamp value is to . . .

2 **Insist on the GE monogram** on all the fluorescent lamps you buy. You can depend on the quality of G-E fluorescent lamps, for every use in store, office, factory and home. *And you can rely on General Electric for the latest developments in lamps, because General Electric Lamp research is constantly at work with one idea in mind—to make General Electric lamps Stay Brighter Longer.

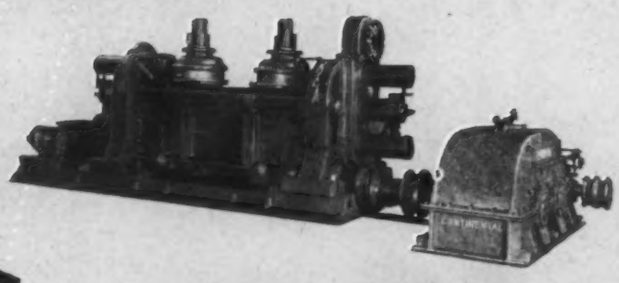
G-E LAMPS

GENERAL ELECTRIC

Continental

ROLLING MILL EQUIPMENT

Designers and builders of dependable standard and special rolling mill and steel plant equipment and special machinery.



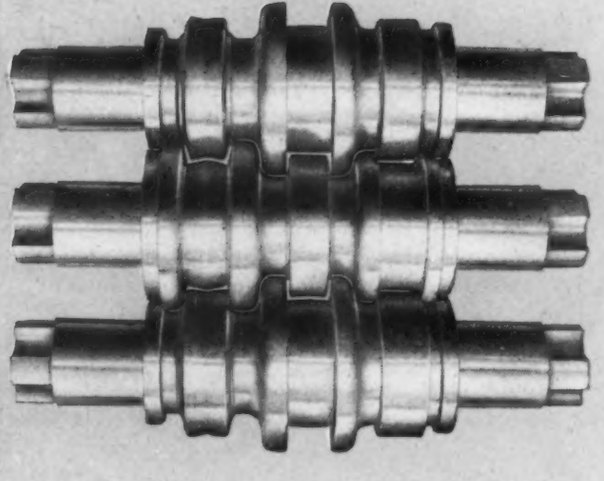
PRECISION CASTINGS up to 250,000 lbs.

Carbon and Alloy Steel castings to your exact specifications.



ROLLING MILL ROLLS

Carbon Steel, Alloy Steel, Iron and Alloy Iron Chilled Rolls for ferrous and non-ferrous mills.



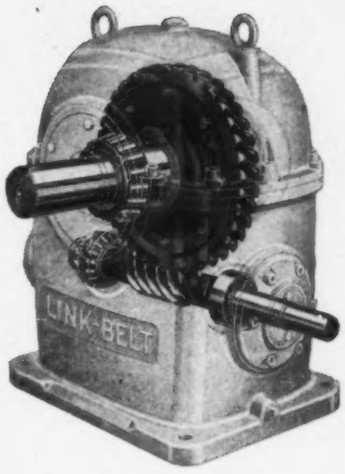
Continental

FOUNDRY & MACHINE CO.

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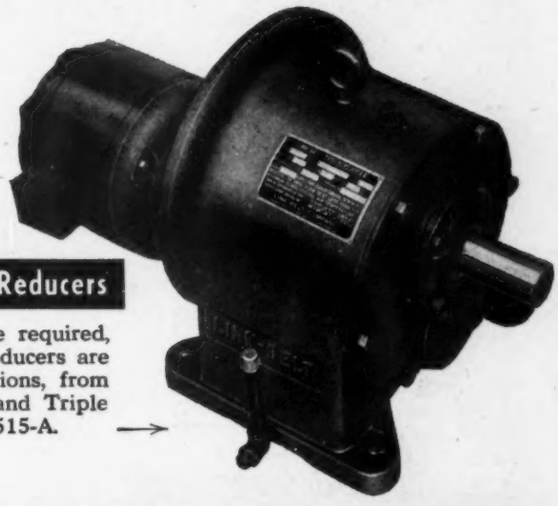
Plants at E. Chicago, Ind.; Wheeling, W. Va.; Pittsburgh, Pa.

If your power transmission problems involve constant or variable speed enclosed gear units, you can rely on always getting the right answer from Link-Belt



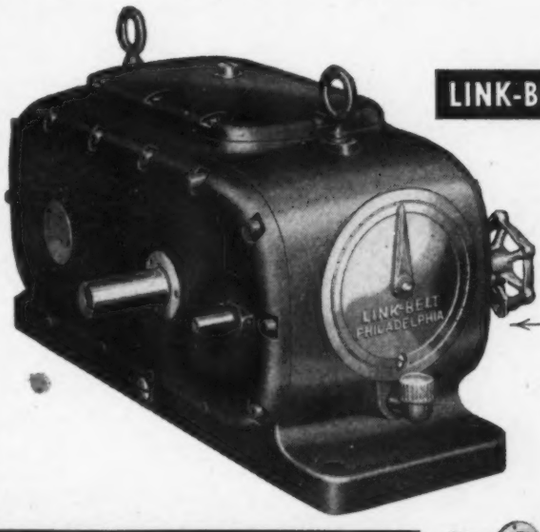
LINK-BELT Worm Gear Reducers

Single Reduction units recommended for larger horsepowers are built in ratios up to 100 to 1. Helical Worm Units, applicable to both small and large horsepowers are available from 26 to 1 to 540 to 1. Where extremely high ratios for small horsepower drives are required, Double Reduction Units will provide ratios up to 8000 to 1. Available for both horizontal and vertical driving. Ask for Data Book No. 1824.



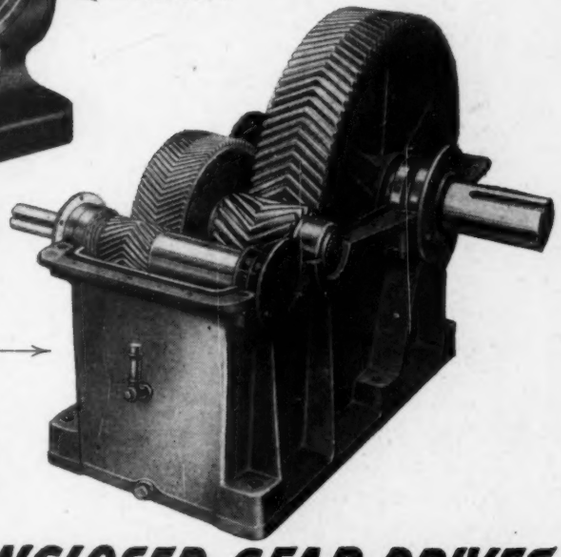
LINK-BELT Motorized Helical Reducers

Where self-contained power units are required, Link-Belt Motorized Helical Gear Reducers are available for medium speed applications, from 1 to 75 h.p. Made in both Double and Triple reductions. Ask for Data Book No. 1515-A.



LINK-BELT P.I.V. Gear Speed Changers

The only speed changing mechanism which employs a positive chain drive to transmit power from input to output shaft. Speed changes are infinitely variable and can be made while operating. Available in 7 sizes and in 5 standard types for horizontal and vertical mountings. Ask for Data Book No. 1874.



LINK-BELT Herringbone Gear Reducers

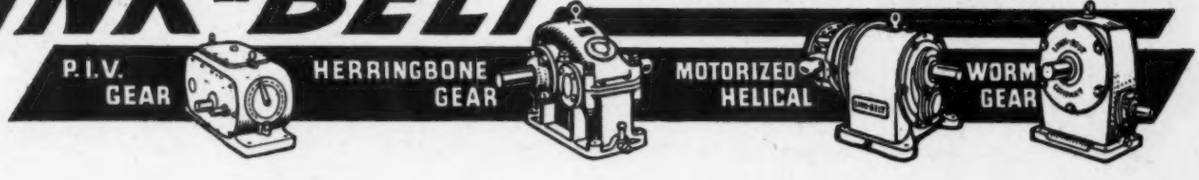
Speed reduction problems which include large reduction in limited space and the ability to withstand shock, find a ready solution in the application of Link-Belt Herringbone Gear Reducers. Made in Single Reduction in sizes from 1½ to 518 h.p.; in Double Reduction in sizes from ¾ to 339 h.p.; in Triple Reduction from ¼ to 213 h.p. Ask for Data Book No. 1519-A.

LINK-BELT COMPANY

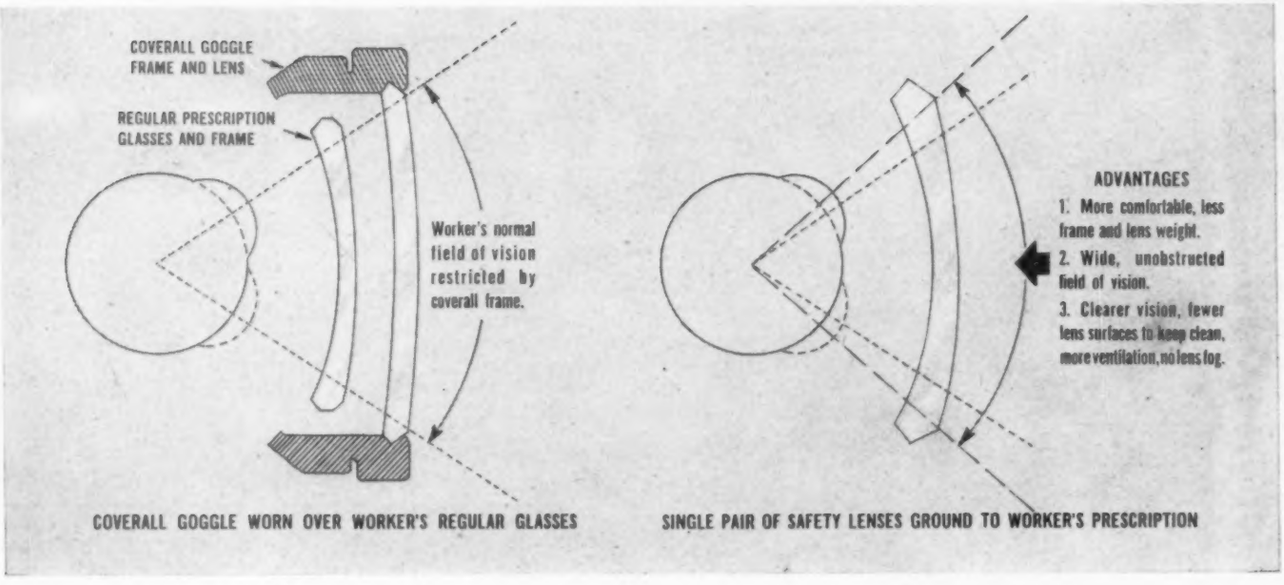
Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.
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10,397

LINK-BELT ENCLOSED GEAR DRIVES



How Prescription-Ground Safety Lenses Increase Workers' Efficiency . . . . .





If you want increased production, improved quality, reduced labor turnover, fewer accidents, lower training costs, write for this booklet which describes the Ortho-Rater System of Visual Performance Tests, and other details of the Bausch & Lomb Industrial Vision Service.

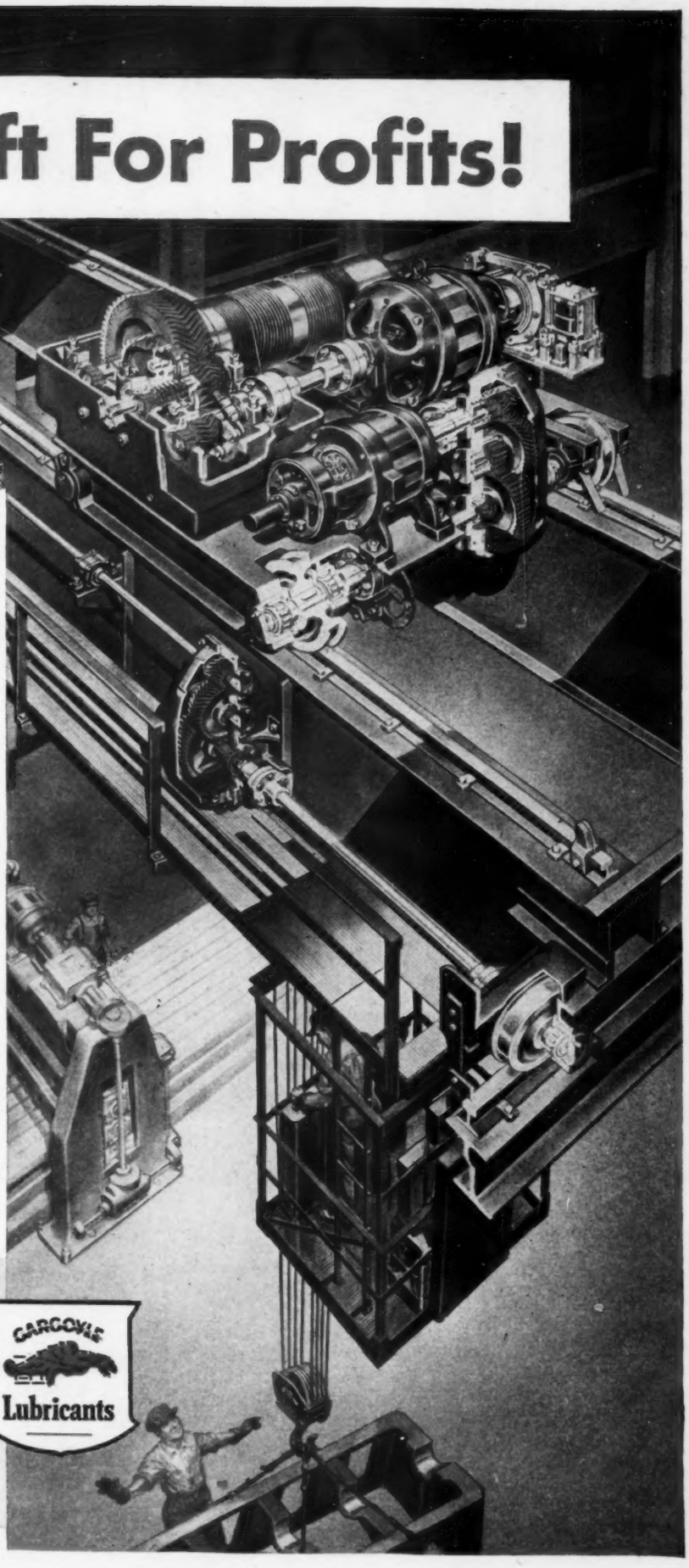


Modern industrial eyewear must provide *protection* and *correction.* In the Bausch & Lomb line of safety eyewear are models for protection against hazards of flying particles, glare, fumes, or dust. And with Bausch & Lomb Safety Lenses you can incorporate correction—professionally prescribed to the visual requirements of every job—to give workers the comfort and added earning power of top visual efficiency. Bausch & Lomb Optical Company, 741-11 St. Paul St., Rochester 2, N. Y.

BAUSCH & LOMB

ESTABLISHED 1853

Big Lift For Profits!



●Throughout U. S. industry today, the big lifting jobs go to giant traveling cranes like this. You'll see them hoisting 10-ton ladles of metal, lifting huge railroad locomotives, swinging massive machines into place.

●This cutaway shows the muscles and sinews of this mighty machine. Here, as in other equipment in your plant, Correct Lubrication protects vital parts.

●On gears and in bearings, oil must stay put with no drippage—must reduce wear under loads. There is a Gargoyle Oil that meets each of these requirements. On those sheave block and track wheel bearings, grease must remain on rubbing surfaces and cushion against shock loads. Gargoyle Greases meet this need. Even the wire ropes must be lubricated. Socony-Vacuum makes products that penetrate into the strands, to lubricate and prevent rust.

●All this is typical of the knowledge that Socony-Vacuum brings to the lubrication of every machine in every industry. It is your assurance of maximum efficiency, peak production and lower costs—factors that mean a "lift" for profits.

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: Magnolia Petroleum Company
General Petroleum Corporation

Get this Complete Lubrication Program for all your machines

- Lubrication Study of your Entire Plant
- Recommendations to Improve Lubrication
- Lubrication Schedules and Controls
- Skilled Engineering Counsel
- Progress Reports of Benefits Obtained

GARGOYLE Lubricants

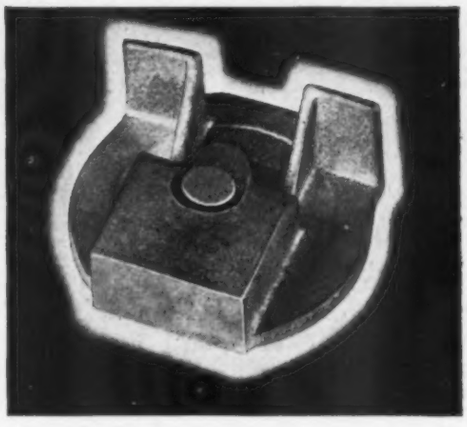
This illustration prepared with the cooperation of Whiting Corp.

Scovill NON-FERROUS FORGINGS

When SCOVILL becomes your METAL-PARTner

PRECISION FORGINGS LIKE THESE MAY PREVENT REJECTIONS OF EXPENSIVELY MACHINED PARTS

THE PROBLEM: An important component in an air-operated control instrument, this sand casting was unsatisfactory. Although tinned to prevent porosity, there were many rejections due to pressure leaks—but this could be determined only after intricate, costly machining had been completed. Also, the casting's natural surface roughness was unattractive.

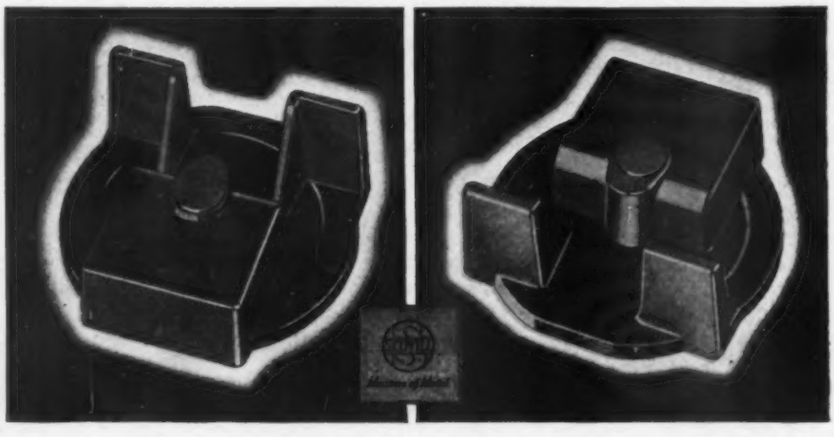


GET THE FACTS ON SCOVILL

If the metal parts you're now using are not entirely satisfactory, it may be worth your while to call in Scovill. Long experienced in every phase of non-ferrous forging, and with complete facilities for precision machining, we have solved many complicated problems by carefully considered changes in method or design. With Scovill as *your* METAL PARTner, this broad experience is immediately directed towards getting the improvements you want—in quality, performance or economy. Let us tell you how . . . Fill in the coupon and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn. *Export Department:* 405 Lexington Avenue, New York 17, N. Y.



SCOVILL'S SOLUTION: Although the initial cost is higher than the sand casting it replaces, this Scovill precision forging makes possible over-all savings for the manufacturer. The dense grain structure of the forging eliminates all expensive rejections due to porosity and, at the same time, furnishes a smoother, more attractive finish which improves the appearance of the product . . . A typical example of how Scovill combines improved quality with lowered cost.



Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
- ☐ Cameras
- ☐ Communication Equipment
- ☐ Cylinder Valves
- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
- ☐ Pumps
- ☐ Valves
- ☐ Welding Equipment

Other applications.....

.....

SCOVILL MANUFACTURING COMPANY
Forgings Division
21 Mill Street
Waterbury 91, Connecticut

Name .....

Company .....

Address .....

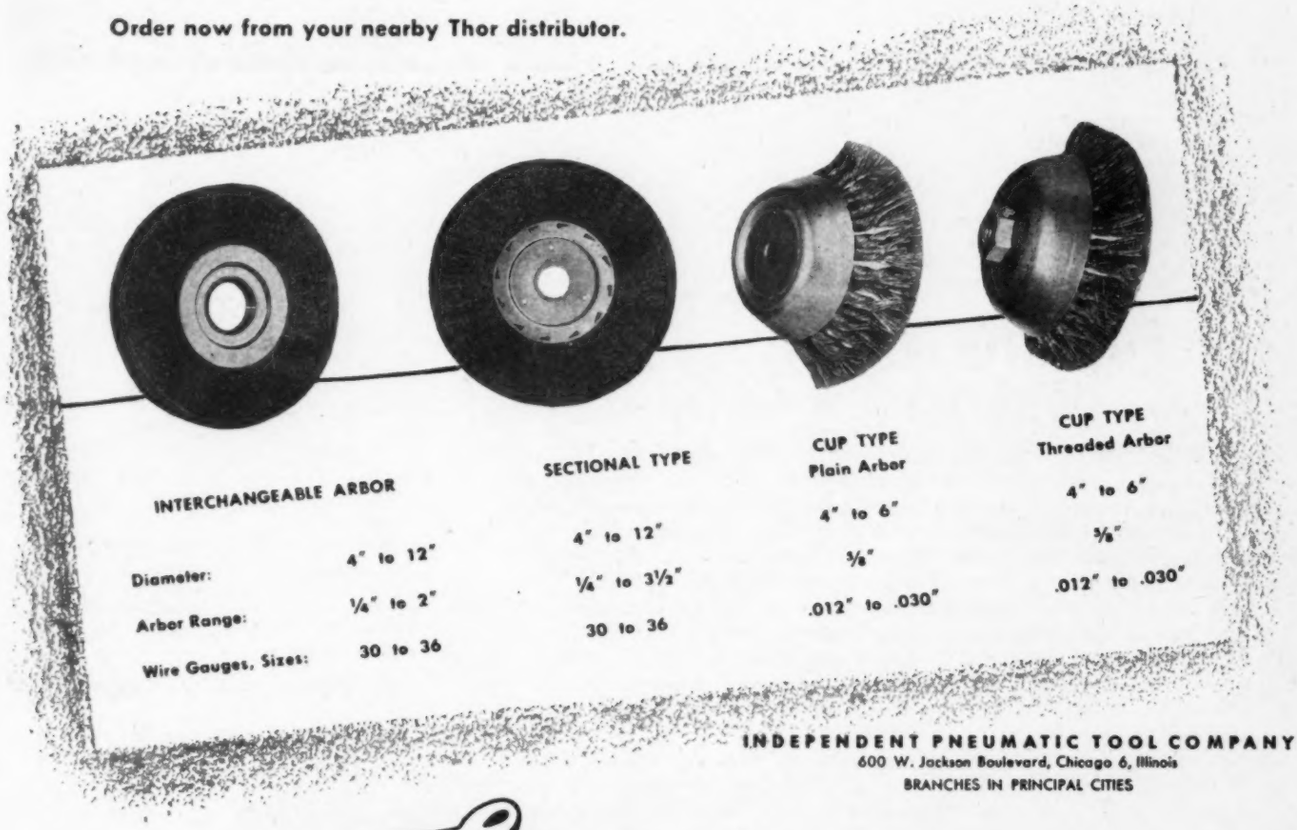
NOW... *Immediate Delivery!*

Thor WIRE WHEEL BRUSHES

from Distributors Stocks . . .

Now you can get immediate delivery of sturdy, long-life Thor wire-wheel brushes in most popular styles and sizes from your nearby Thor Distributor's stock. Available in a range of sizes from 4" to 12" diameter in single-unit, arbor-hole adaptor or metal-center sectional type. Brush sections are heavily filled with Double-Durable special crimp wire in gauges of 30 to 36. Constructed to resist crystallization and breakage, these modern brushes will operate efficiently on portable and stationary equipment with spindle speeds up to 6000 R.P.M.

Order now from your nearby Thor distributor.



	INTERCHANGEABLE ARBOR	SECTIONAL TYPE	CUP TYPE Plain Arbor	CUP TYPE Threaded Arbor
Diameter:	4" to 12"	4" to 12"	4" to 6"	4" to 6"
Arbor Range:	¼" to 2"	¼" to 3½"	⅝"	⅝"
Wire Gauges, Sizes:	30 to 36	30 to 36	.012" to .030"	.012" to .030"

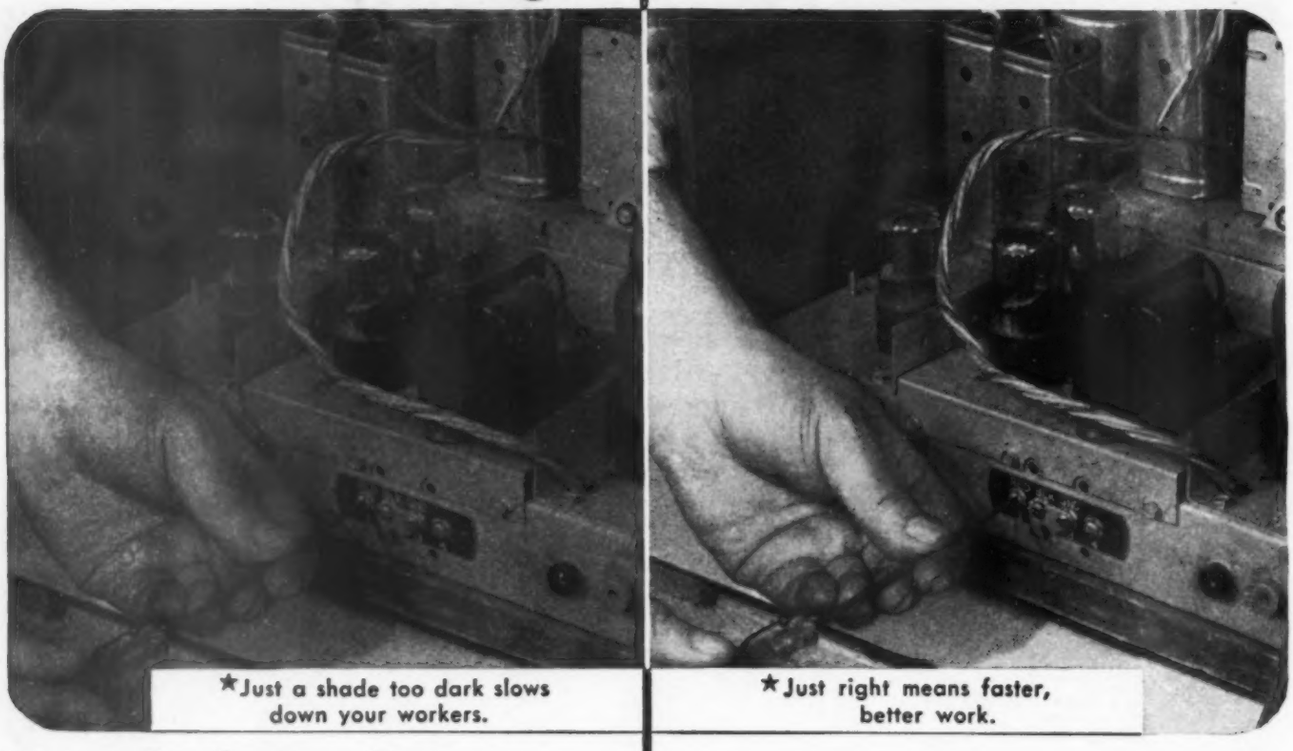
INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Boulevard, Chicago 6, Illinois
BRANCHES IN PRINCIPAL CITIES

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

BORDERLINE VISION*

"Chiseling" Your Profits?



*Just a shade too dark slows down your workers.

*Just right means faster, better work.

Lower Production Costs With Wheeler Skilled Lighting!

You may not realize you're being "chiseled". Lighting that's just a shade too dim may be hard to spot at a glance. But . . .

Borderline Vision in many a plant cuts into profits because of little, individual production slow-downs. A careful worker may take a second look. A careless one may make a mistake that means rejects . . . little slow-downs that add up to an expensive lag in production.

Since 1881 Wheeler engineers have specialized in eliminating these lighting handicaps. Wheeler Reflectors are engineered to control light – to put light to work where it's needed – on the job. Their special, high reflection factor gets maximum illumination from standard lamps. And their rugged, porcelain-enamel coated construction means long service and minimum maintenance.

Learn why better work and reduced costs are almost automatic when you install Wheeler Skilled Lighting. Write today for full details on Wheeler incandescent and fluorescent lighting fixtures. **Wheeler Reflector Co., 275 Congress St., Boston 10, Mass.** Representatives in New York and principal cities.

Distributed Exclusively Through Electrical Wholesalers



All-Steel Open-End Fluorescent Unit
Available for two or three 40-watt, or two 100-watt lamps. Broad wiring channel with accessible, enclosed ballast. Mounts from chain or conduit, individually or in continuous runs.

RLM Solid Neck Incandescent Reflector



Maximum lighting efficiency for either indoor or outdoor use. Expertly designed, ruggedly built. 75 to 1500 watts.

Wheeler Reflectors
SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

BWH
DEPENDABLE RUGGEDNESS



HOW TO GIVE A DAM A FACE LIFTING

USE BWH AIR DRILL HOSE

One of the country's big dams needed a new concrete facing. But before it could be applied, the wall had to be "roughed" with compressed air . . . to give it an irregular pattern that would hold the new concrete.

The air hose selected for this job had to withstand high pressures, the oil and heat of compressors, and the constant impact of jagged edges of broken concrete. Naturally, BWH BAY STATE Air Drill Hose was the contractor's choice. This quality air hose is made with the highest grade oil-resistant tubing and has multiple plies of heavy cotton duck set in strong, flexible rubber for added ruggedness.

When next you need heavy-duty air hose, look to BWH for dependable ruggedness . . . BWH distributors for dependable service.

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor, or write to BWH direct.



BOSTON WOVEN HOSE & RUBBER COMPANY

Agents in All Principal Cities

WORKS: CAMBRIDGE, MASS., U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.



Greater Load Capacity with McGILL SOLIDEND MULTIROL Bearings

The full length, rounded end rollers, used in the "Solidend" Multirol Bearing, increase the contact surface between race and rollers. This gives the McGill Bearing a greater load capacity and a longer, trouble-free life. The solid retaining end shoulders built integral with the outer race eliminate flimsy end washers and loose retaining rings. As a result "Solidend" Multirol Bearings can be used with or without the inner raceway.

An application of these bearings is in the Boom Hoist mechanism of Thew-Lorain Moto-Cranes and Crawler Mounted Machines.

For further information write for catalog SM-42.

McGILL MANUFACTURING CO., INC.
Manufacturers of Ball and Roller Bearings
VALPARAISO - INDIANA



Above: Centrifugally cast monel metal plating roll being finish-machined at Shenango-Penn.

Below: These shapes, all centrifugally cast, show that Shenango-Penn process is not limited to shapes of simple circular section.

VIRTUALLY any engine, machine, or unit of equipment requiring symmetrical parts can be improved by using Shenango-Penn centrifugal castings instead of ordinary castings. This is true because, metal for metal, parts produced the Shenango-Penn way are measurably superior in tensile strength, density, hardness, and uniformity. They have finer grain structure, are better able to withstand friction, abrasion, corrosion, and all kinds of stresses.

These are not mere "laboratory" differences of meager value. They are distinct advantages that time and again have resulted in stronger, more durable, better performing products for Shenango-Penn customers.

Applying Shenango-Penn centrifugally cast parts is also a good way to reduce costs. The castings require less machining, saving time and metal. There are no sand inclusions; no blow holes to contend with. Superior, more uniform grain structure makes it easier, less expensive to attain the desired finish!

Shenango-Penn has complete, modern facilities to carry your machining requirements as far as you wish, can supply either rough castings, semi-finished or completely machined precision parts to your specification.



FREE BULLETIN No. 143

Ask for this free bulletin. It gives full information on the complete range of available ferrous and non-ferrous alloys, physical and chemical properties, recommended uses, and other data helpful in making a good engine or machine still better.

SHENANGO-PENN

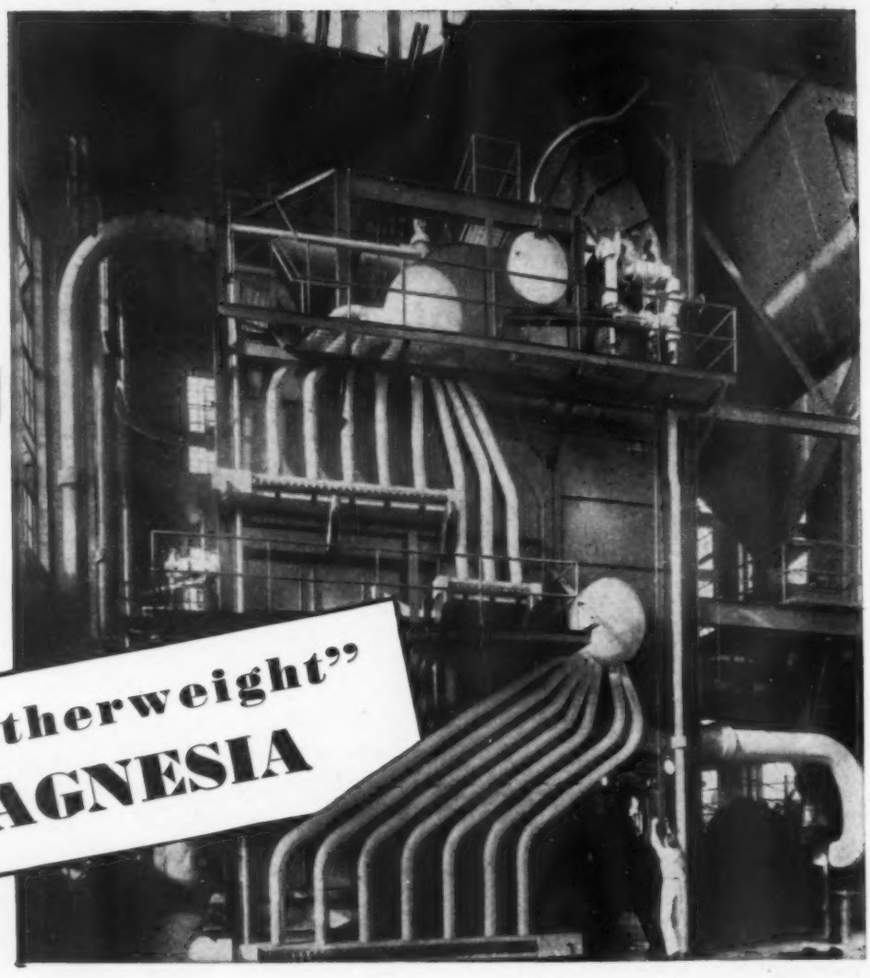
SHENANGO-PENN MOLD COMPANY

2460 WEST THIRD STREET • DOVER, OHIO

EXECUTIVE OFFICES: PITTSBURGH, PA.

ALL BRONZES • MONEL METAL • ALLOY IRONS

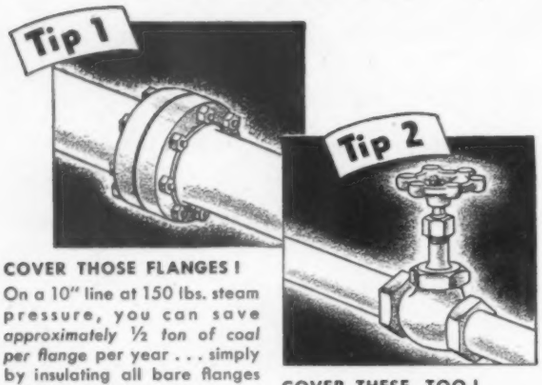
"Featherweight" 85% Magnesia application in a large distillery, where temperatures must be accurately controlled . . . showing insulated drum ends, water wall piping and headers.



How to S-T-R-E-T-C-H your fuel supply

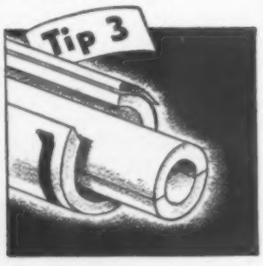
K&M "Featherweight" 85% MAGNESIA

3 TIPS TO HELP YOU SAVE FUEL!



COVER THOSE FLANGES!
On a 10" line at 150 lbs. steam pressure, you can save *approximately ½ ton of coal per flange* per year . . . simply by insulating all bare flanges with "Featherweight!"

COVER THESE, TOO!
Similarly, gain further fuel savings by covering all valves, elbows and other fittings in the steam lines.



SPECIFY THE BEST
To be sure of maximum fuel efficiency, minimum heat loss, be sure all lines are covered with "Featherweight" 85% Magnesia.

With coal so hard to get these days . . . and *all* fuel a costly item . . . it's more important than ever to squeeze that last BTU out of your fuel supply.

You can be sure of minimum heat loss and low fuel consumption if you standardize on K&M "Featherweight" 85% Magnesia insulation. Designed for pipes carrying up to 600°F., "Featherweight"—under various service conditions—has proved to be the most efficient insulation of the moulded type. It is light in weight, fire-proof and extremely durable.

Send for full technical information about "Featherweight" . . . and find out how it can help you gain more power with less fuel, at less cost.

Nature made Asbestos . . .
Keasbey & Mattison has been making it serve mankind since 1873.

K&M best in asbestos

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

WHETHER YOUR PRODUCT IS SIMPLE OR COMPLICATED . . .



BETTER SPRINGS

will make it better

THERE'S a difference between springs and the *right* springs. The *right* springs in your product mean a higher degree of dependability, more uniformly successful performance. Whether you make something as simple as a mechanical pencil. Or as complicated as an adding machine.

The *right* springs are our business. Springs for every conceivable application. Springs that will function with unfailing accuracy even under seemingly impossible conditions.

We have developed modern spring engineering to a new high point in efficiency. Our production methods have been streamlined to meet your needs. For example we are equipped to produce by the million . . . NOW, for *immediate* delivery . . . uniform, high quality springs in the small sizes used in mechanical pencils, cigarette lighters, typewriters, adding machines, and similar applications.

Let us help you select the right springs for your product . . . whether it is simple or complicated, large or small, "old" or new. If you want *better* springs than you can get elsewhere, call us.



AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*

United States Steel Export Company, New York

UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY — USS — AMERICAN SPRINGS — UNITED STATES STEEL

U·S·S American Quality Springs

WHY YOU WILL

SWITCH TO WIREBOUNDS

WHEN SHORTAGES EASE

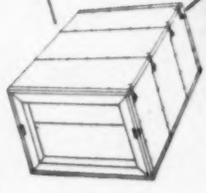


PRE-TESTING GIVES YOU EXTRA SHIPPING SAFETY

You ship in confidence when you ship in Wirebounds because you know that your box or crate is based on specifications developed by exhaustive laboratory testing of the stresses, shocks, impacts and overloads encountered in actual shipping and warehousing. Thickness of face sections, size of cleats, size and position of battens, gauge, number and location of binding wires and staples are determined only after careful study of your product and your shipping problems.

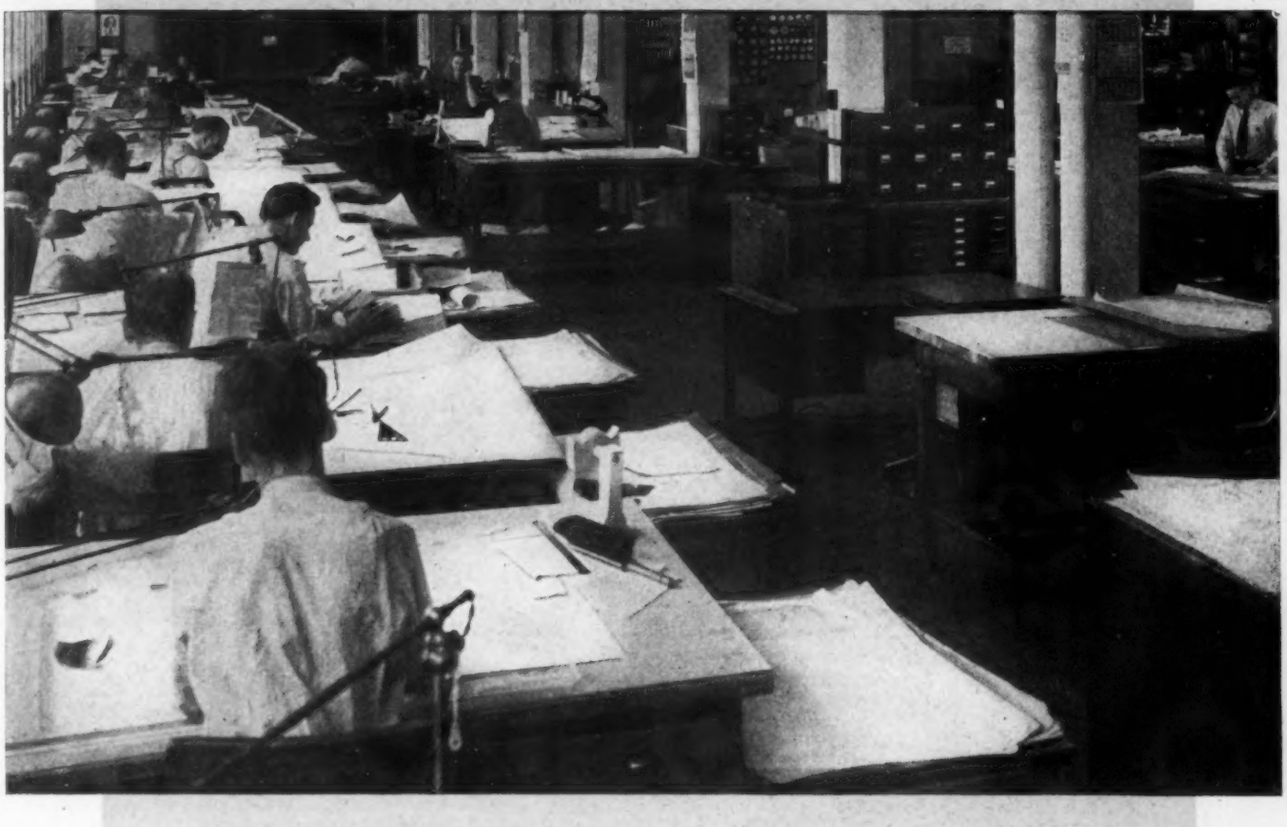
NOTE: Shortages of lumber, veneer, and wire make it impossible to predict when we can again serve all those who desire the advantages of Wirebounds. Yet we should like to send you a copy of "YOUR PRODUCT . . . how to ship it safely and at lower cost." It will fully acquaint you with *all* the advantages that will be yours when you ultimately SWITCH TO WIREBOUNDS.

Wirebound Box Manufacturers Association,
Room 1821, Borland Building
Chicago 3, Illinois



Wirebound
BOXES & CRATES

Initial Step to Economy...
The Drafting Table



Profitable assembly or manufacture of your product begins on the drafting table. Here, economical means of precision production as well as functional beauty and efficiency of the finished product are planned.

The Metal Men of Manitowoc are skilled in serving an imposing variety of industries. Manufacturing facilities are strained to capacity, but in the not-too-distant future we will again be able to offer you our combined experience in helping to solve engineering and design problems.



FULL FACILITIES FOR CONTRACT MANUFACTURE

- Engineering and Design Department
- Complete Machine Shop and Die-Making Facilities
- Spacious Aluminum Rolling Mills
- Wide Range of Stamping Presses
- Annealing Ovens
- Heat Treating Equipment
- Gas and Electric Welding
- Four Large Fabricating Plants
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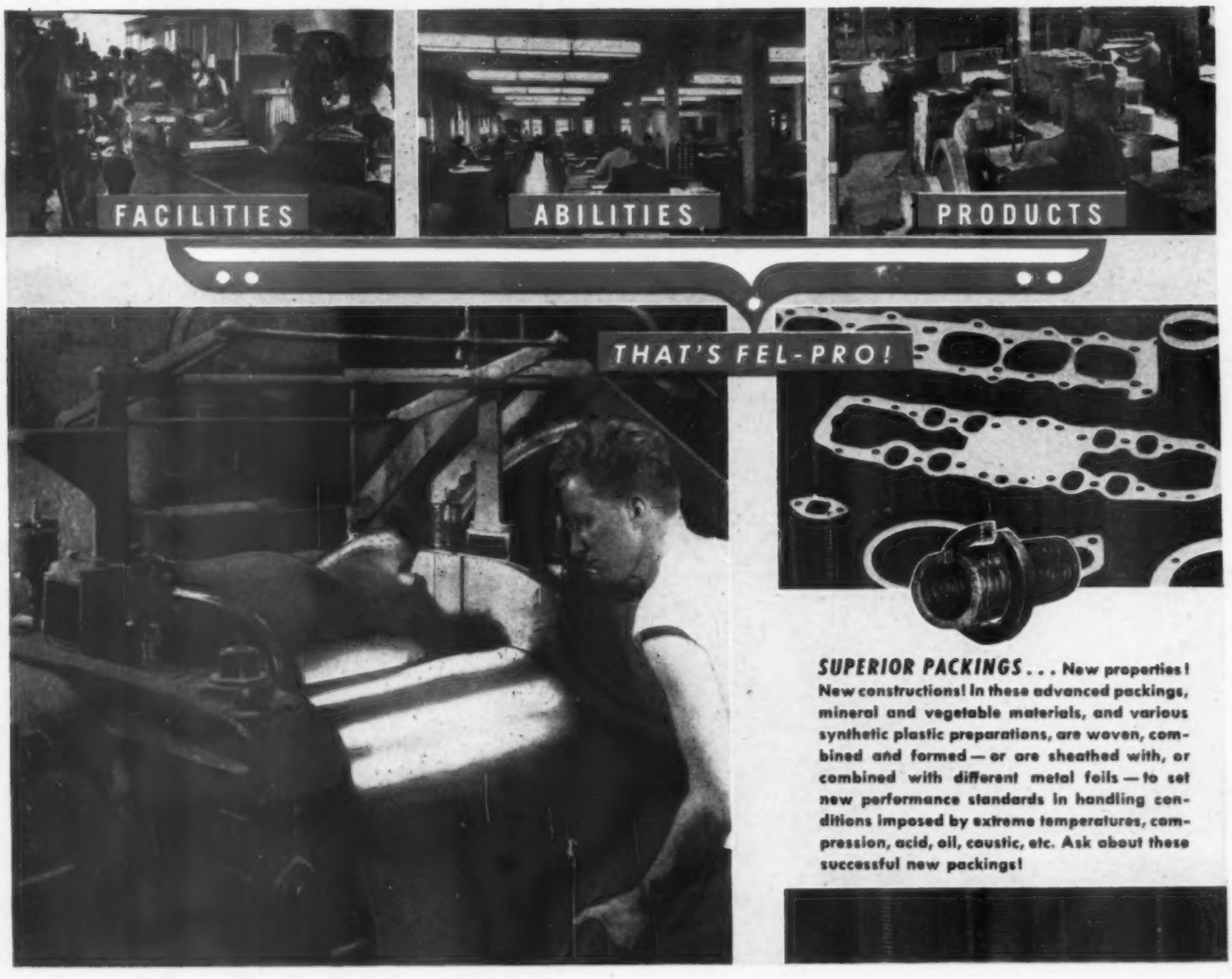
ALSO MAKERS OF
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The Finest Aluminum Cooking Utensils

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New Gasket Materials! *Better Answers to New Product Problems;* Old Ones, Too!



New Abilities in Materials Provide New Possibilities in Design, Performance

Consult Fel-Pro! Engineers who are working on new products or redesigning old ones find many of their gasket, packing and sealing wants anticipated here at Fel-Pro. Here, new processing has greatly widened the usefulness of many conventional materials, and new synthetics with new characteristics are answering new problems and better answering old problems.

Suppose, for example, that you wanted new mechanical properties in a dielectric material, or an oil-resisting gasket that retained a certain, measurable resilience despite new heat conditions, or a packing that remained indifferent to acid under a new set of circumstances: Ask Fel-Pro. If it isn't already here, we will develop it here for you! So, either way, whether you seek something you didn't think existed before, or want to do an everyday job better, it should pay you to write and see if Fel-Pro can satisfy your want. . . . FELT PRODUCTS MFG. CO., 1514 Carroll Ave., Chicago 7, Illinois.

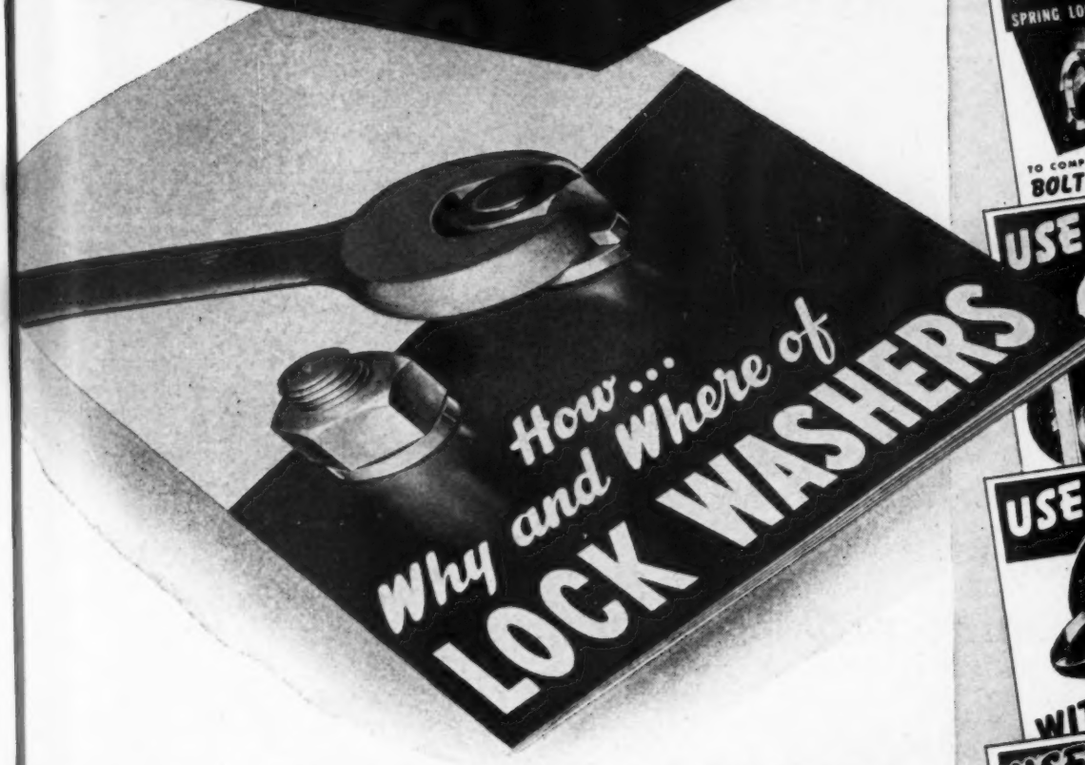
FEL-PROtect with

1844

Sealing Materials, Gaskets, Packings, Sound- and Vibration-Dampening Materials, Specially Treated, Die-Cut and Fabricated by Fel-Pro.

IF YOU BUY OR SPECIFY LOCK WASHERS

GET THIS BOOK!





NEW FACTS . . . SPECIFICATIONS . . . RECOMMENDATIONS

You should know about Lock Washers

From the latest American Standards Specifications right on through to what to use and where. That's how complete this new Diamond G Lock Washer booklet is. On the right are shown some of the pages from this new book. In addition there are many other facts that every design engineer, production manager, purchasing agent and other executive should have at his finger tips when buying or specifying lock washers or other fastening devices.

This book is just part of the complete service the Diamond G man has to offer you. He is ready to help you with data and engineering advice . . . plus supplying you with a complete line of flat and lock washers—from No. 0 to 2″ in all materials and finishes. For quick deliveries, high quality and product satisfaction write, wire or phone . . .

GEORGE K. GARRETT CO., INC.
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SEND THIS COUPON NOW!

GEORGE K. GARRETT CO., INC.
1421 Chestnut Street, Philadelphia 2, Pa.

Please send me a copy of the NEW DIAMOND G LOCK WASHER book...

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TITLE_____

COMPANY_____

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DIAMOND G PRODUCTS

WASHERS • • FLAT WASHERS • • STAMPINGS • • SPRINGS • • HOSE CLAMPS • • SNAP AND RETAINER RINGS

Measure

Protection
OF SMALL MOTORS

in terms of

Production

and you'll install

BUSS FUSETRONS

throughout your electrical system to protect all of them

Here's Proof...

Fusetrons Eliminate Average of Two Motor Burnouts per Month on Fan Motors.

"Steam is exhausted from the rooms where we empty our bone char by exhaust fans of two types—a 36 inch fan operated by ½ h. p. motor and a 24 inch fan operated by ¼ h. p. 3 phase—220 volt motor. The grilles or louvers open to the northeast right over the Delaware River. High winds will therefore sometimes stall the motors and in a very severe storm, the wind may even reverse the direction of the motor while it is running. Also, the starting current is increased greatly when the blades are revolving in the opposite direction, due to high wind.

"Prior to 1942, at least two of these fan motors were replaced every month, due to burnout. Replacement was very difficult and expensive due to the fact that the fans are mounted right below the ceiling and above steam pipes.

"Early in the summer of 1942 we installed 8 ampere Fusetrons for the ½ h. p. motors and 6¼ ampere Fusetrons for the ¼ h. p. motors. Up to August of 1945 we had not had to replace a single fan motor protected by Fusetrons."

David J. Coles, Electrical Engineer,
McCahan Sugar Refining Co.,
Philadelphia, Pa.

Motor Repair Co. Won't Guarantee Motor Rewind Job Unless Motor is Protected by Fusetrons

"We have found Fusetrons and Fustats (Fusetrons with a tamper resisting base for 125v. circuits) so satisfactory for the protection of small motors that for a number of years we have refused to give a warranty with a rewound motor job unless the owner installed a Fusetron or Fustat to protect the motor. We saw to it that the size used would give burnout protection.

"We are convinced that this policy of installing a Fusetron or Fustat to protect all rewound motors has saved us a lot of unjustified complaints—and no one knows how much expense taking care of motors within the warranty period."

A. H. Wolf, Superintendent
of Motor Repair Dept.
Swanson-Nunn Electric Co.
Evansville, Ind.

BUSS FUSETRONS

GET SMALL MOTOR PROTECTION
Simply and Inexpensively

Burnout of motors from lack of oil, worn bearings, tight belt, overloading—or anything that causes a dangerous excess of current through the motor—can, on normal installations, be prevented by Fusetrons.

Just install a Fusetron of motor-running protection size, anywhere in the circuit to handle only the motor current. *That's All.*

If motor is on a separate circuit, install the Fusetron in the switch or panelboard. Then the motor as well as the circuit wiring is protected.

If the motor is on a general use circuit or a circuit feeding more than one motor, protect each motor individually by installing a switch or a fuse block with the proper size Fusetron. *It Is As Simple As That.*

Protect Against Cost of Replacing a Motor—and Against Production or Operating Losses

When pumps, fans, air compressors, blowers, conveyors, mixers, stokers, oil burners, grinders —or any of the hundreds of other circuits on which small motors are used—are out of service because of a motor burnout the losses incurred generally make the cost of Fusetron protection seem mighty small.

You not only have the cost and trouble of removing and replacing the destroyed motor—but all the time the motor is down, production or operating losses pile up.

It's guarding against these double losses that makes it pay you so well, to go to the little expense and trouble necessary to install Fusetrons for the protection of all small motors used throughout your plant or building.

FUSETRONS GIVE MANY OTHER KINDS OF PROTECTION HERETOFORE NOT AVAILABLE

Fusetrons do everything fuses do, as is confirmed by the Underwriters' Laboratories' Label, and in addition . . .

★ Provide simplest way to stop burnouts from single phasing. ★ Entirely wipe out needless blows caused by motor starting currents or other harmless overloads. ★ Give thermal protection to panelboards and switches. ★ Prevent needless blows caused by heating in panels and switches. ★ Permit use of larger motor or adding more motors on circuit without installing larger switch or panel. ★ On new installations proper size switches and panels can be used instead of oversize. Protect motors against burnout. ★ Give double burnout protection to large motors.



What is the FUSETRON?

The Fusetron is a DUAL element device—a Fuse to which is added a Thermal cutout.

The result is a fuse with tremendous time-lag and much less electrical resistance.

Fusetrons have the same degree of Underwriter's Laboratory approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses, Fusetrons fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere in both 250 and 600 volt types. Also in tamper-resisting type (Fustats) for 125 volt circuits.

Their cost is surprisingly low.

Get All the Facts

Get Better Protection—Send the Coupon Now

Even one lost, hard-to-replace motor, or one needless shutdown or destroyed panel may cost you far more than replacing every fuse with a FUSETRON.

Don't risk such losses—protect your production schedules by changing over your entire electrical system to FUSETRONS.

BUSSMANN MFG. COMPANY
University at Jefferson • St. Louis 7, Mo.
(*Division McGraw Electric Co.*)

Sold through Wholesalers

BUSSMANN MFG. CO., University at Jefferson St. Louis 7, Mo. (*Division McGraw Electric Co.*) 1146

Please send me complete facts about BUSS Fusetrons.

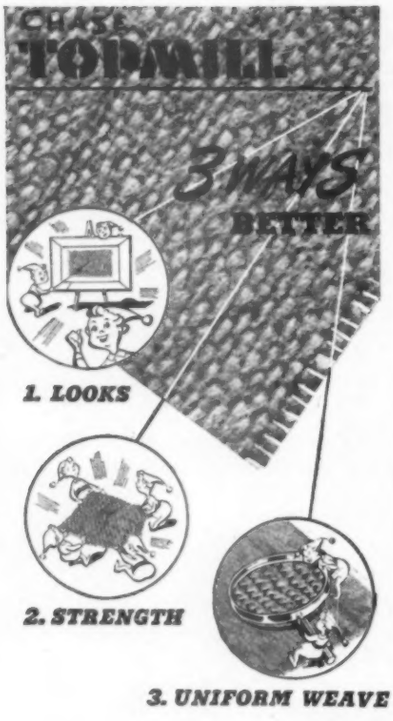
Name_____

Title_____

Company_____

Address_____

City_____ State_____



• Not just 1, or 2, but 3 ways better, Chase TOPMILL burlap looks better, wears better, IS better! And here's why: Chase buys only from the mills in India whose products meet our high standards—standards of appearance, strength and weaving that are the result of 99 years' experience in the bag business.

To assure you real TOPMILL quality, a Chase burlap expert went to the Calcutta burlap market. He inspected mills, checked samples, made recommendations—all with *your* needs uppermost in mind. The result is Chase TOPMILL—the better burlap with looks, strength, and uniform weave.

Specify this better burlap by name—Chase TOPMILL.

Chase Brite-Weaves No Finer Burlap . . .

Specify Brite-Weaves for premium-grade burlap. Rich, light-colored burlap—not specky or fuzzy. Extra thread count. Fine, even weave with silk-like sheen. It's the aristocrat of burlaps!



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CHASE BAG CO.

GENERAL SALES OFFICES
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F.O.B. filosofy of buying

BUYERS of fabricated steel products who have experienced trouble in locating sources, find that their prospective suppliers face the same difficulty in locating steel. Lyon Metal Products, Inc., of Aurora, Ill., is meeting that situation with an adaptation of the old principle of barter. "You furnish the steel, and Lyon will make the product," is the theme of a national advertising series inaugurated by the company. The plan is based on the assumption that many firms have miscellaneous and left-over stocks of steel on inventory, which can be put to useful purposes, to the benefit of both, and without any adverse effect on current business utilizing the limited quantities of metal available through normal distribution channels. Early reports indicate that the idea works.

• •

DEWEY T. Jones, UNRRA Purchasing Agent at Honolulu, found a letter in his mail the other day, bearing $17,010 in stamps. The postage, Chinese, was worth about $8.50 American.

• •

FOR twenty-five years, there has been a pile of flue dust on Jones Island, Milwaukee, by-product of the blast furnace formerly operated at that site by the Illinois Steel Co. From time to time, the city has dug into the pile to make road repairs, but otherwise it was regarded as an asset of very doubtful value. When Port Director Harry Brockel received an offer of $10 for the pile from a scrap iron dealer a few weeks ago, he was only mildly interested. When a second offer of $200 was received, he called off his workers and consulted City Purchasing Agent Joe Nicholson. The latter discovered that there were 990 tons of the stuff, containing a substantial percentage of iron, a commodity currently rated as "very scarce". Convinced that there was gold as well as baser metal in them thar piles, the P. A. called for competitive bids, and when the bids were opened they all began to sing, for the dust brought $3,325 into the city's treasury.

• •

BUYERS' personalities are reflected in the mottoes they hang up in their offices, says John D. Gleichman, Norfolk manager of the Friden Calculating Machine Co., who has made a hobby of noting the signs his customers display. For example, he cites three different approaches to the purchasing job in these three slogans:

"A Perfect 300"
"Think"
"Be Brief, Be Bright, Be Gone"

But the one that impressed him most, he thinks should be posted in the sales department rather than in the purchasing department, where he saw it. It reads:

"Sampson was a piker; he killed only 1,000 men with the jawbone of an ass. Every hour in the day 10,000 sales are killed with the same weapon."

• •

WHEN are there too many purchasing agents? When they clutter up a city and contribute to the housing shortage, says a correspondent from Washington, reporting that more than 3,000 foreign purchasing agents are still occupying half a hundred apartment houses and residential hotels in that city. A current census of the situation shows that a year after V-J Day no less than sixteen governments still retain their purchasing "missions" at the Capital, where they encamped close to the Lend-Lease spigots. Most populous are the British, with a staff of 1,082 people in eight complete buildings and part of another; the French, with 1,000 people in twenty-one buildings; and the Russians, with 400 people in six buildings. Our State Department issued a diplomatic memorandum in May, requesting liquidation of the missions to relieve the housing situation and expedite the return of trade to normal private channels. The answers:

Britain's food buyers will stay on as long as rationing exists in England, and other sections may become permanent to the extent that the Labor government succeeds in attaining its goals of industry nationalization. France has nationalized 18% of its industry, and the wartime missions will continue to do peacetime buying here. Russian trade has been under state control ever since the revolution, and the Soviet government has no intention of giving up its purchasing headquarters in the million-dollar Yorkshire Apartments adjacent to Embassy Row.

• •

FAME is fickle. A public information poll conducted by the Denver *Post* reveals that 84% of its readers know who Dagwood Bumstead, the comic strip character, is. But only 31% could identify Leon Lavington, State Purchasing Agent and Republican candidate for the governorship. There's a shred of consolation in the fact that William L. Knous, Chief Justice of the Colorado Supreme Court and Democratic candidate for Governor, ran third, with a 30% rating.

• •

PURCHASING Agent M. M. Donahue of Allegheny County, Penna., is trying to convince Prothonotary D. B. Roberts that you can't eat your cake and have it too. Recently he bought six new typewriters as replacements for Roberts' department. The deal included a turn-in credit of $15 to $20 each on the old machines, which is standard practice in the County's buying. But then Roberts decided to keep the old ones as well. No turn-ins, no replacements, says Donahue firmly, and the Board of Commissioners backs up his stand.

• •

RED tape is still with us. Industries seeking price increases under the Barkley pricing formula of the Price Control Extension Act must now cope with the most complex and involved regulation ever prepared by OPA, which already had some pretty horrible examples to its discredit. The text of this regulation takes up two full newspaper pages, most of it in closely set 6-point type, which is just about the smallest size legible to the naked eye, or even with corrected vision. Can it be that the theory is that petitioners will take one look at the formula and decide that price relief simply isn't worth the effort?



Performance PLUS Endurance Wins!

The fastest sports event in the world — Ice Hockey — demands the *utmost* in performance and endurance . . . no other test of skill can measure up to the call put to every player — regardless of his position.

Industry, too, has its specific wire rope standards — especially as to strength and adaptability. Whenever the job calls for dependable performance, "HERCULES" (Red Strand) can be relied upon to complete the operation — *economically.*

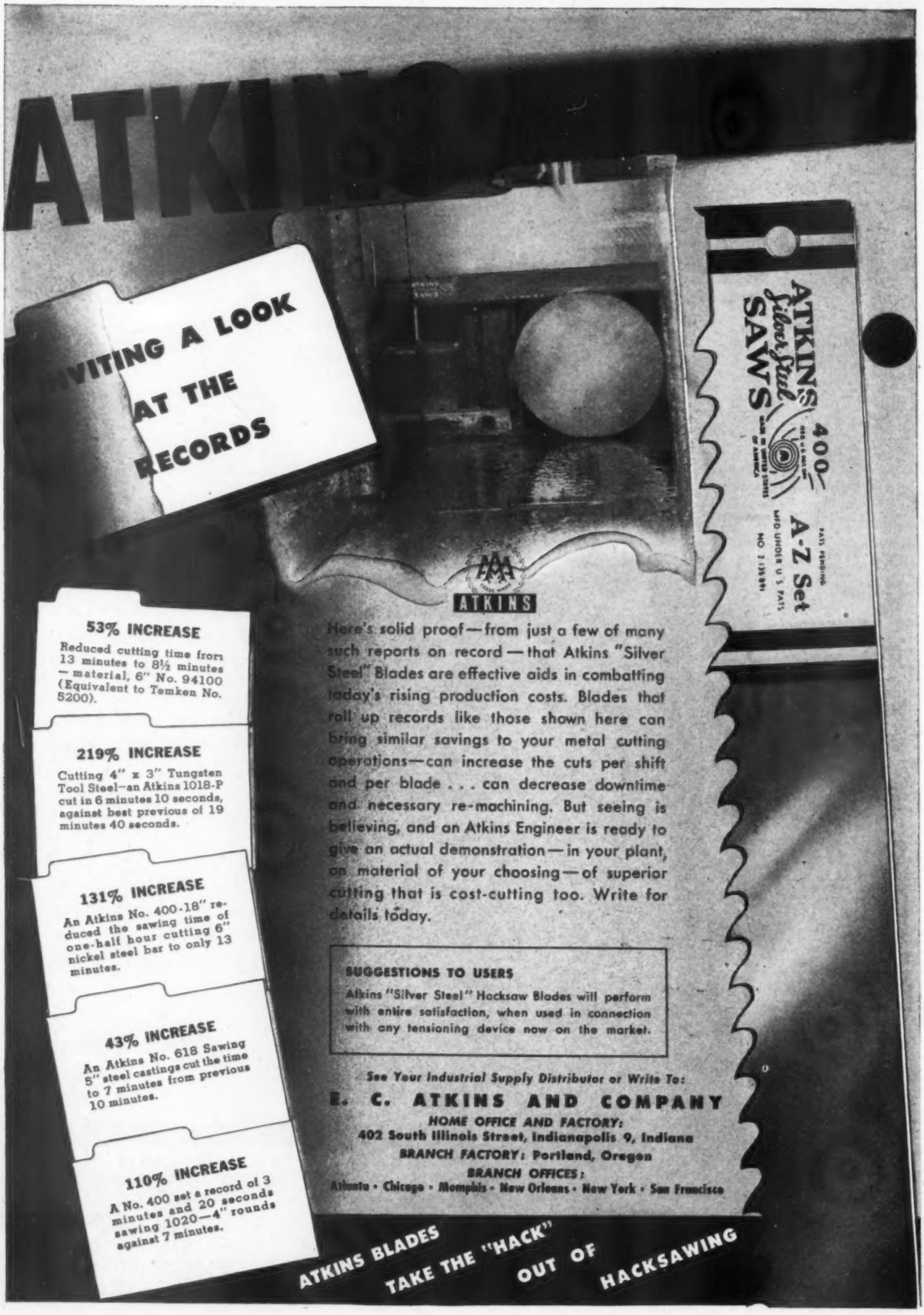
HAVE YOU TRIED Preformed "HERCULES" RED STRAND WIRE ROPE —?— IT'S TOPS AS A MONEY SAVER

Since there is a type and construction especially made to fit every *heavy duty* requirement in *your* industry, you use good judgment when you select "HERCULES" (Red Strand) Wire Rope.

When an especially "tough job" comes up — consult our engineering department.

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Reduced cutting time from 13 minutes to 8½ minutes — material, 6" No. 94100 (Equivalent to Temken No. 5200).
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Cutting 4" x 3" Tungsten Tool Steel—an Atkins 1018-P cut in 6 minutes 10 seconds, against best previous of 19 minutes 40 seconds.
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An Atkins No. 400-18" reduced the sawing time of one-half hour cutting 6" nickel steel bar to only 13 minutes.
43% INCREASE
An Atkins No. 618 Sawing 5" steel castings cut the time to 7 minutes from previous 10 minutes.
110% INCREASE
A No. 400 set a record of 3 minutes and 20 seconds sawing 1020—4" rounds against 7 minutes.
ATKINS
Here's solid proof—from just a few of many such reports on record—that Atkins "Silver Steel" Blades are effective aids in combatting today's rising production costs. Blades that roll up records like those shown here can bring similar savings to your metal cutting operations—can increase the cuts per shift and per blade . . . can decrease downtime and necessary re-machining. But seeing is believing, and an Atkins Engineer is ready to give an actual demonstration—in your plant, on material of your choosing—of superior cutting that is cost-cutting too. Write for details today.
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Atkins "Silver Steel" Hacksaw Blades will perform with entire satisfaction, when used in connection with any tensioning device now on the market.
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ATKINS BLADES TAKE THE "HACK" OUT OF HACKSAWING

his "Q.C." keeps white elephants off your presses



One of the kingpins in Armco's production of Quality Controlled Steels is the mill representative. In a sense he works for *you*, not us.

This roving ambassador of "Q. C." who visits your plant has only one objective: to see that you get the *one right sheet steel* for your products. He wants no "white elephants" holding up your presses or clogging production lines.

"Q. C." — Quality Control — is no stranger to Armco mill representatives and production supervisors. Control charts and statistical analysis are developments of recent years; they help assure consistent production of prime Armco sheets.

But control charts are only part of the story. For almost 20 years "Q. C." has been a live, familiar term in the Armco mills. It governs the control of sheet steels even before the "charge" goes into the open-hearth furnace.

INDIVIDUAL ROUTINGS

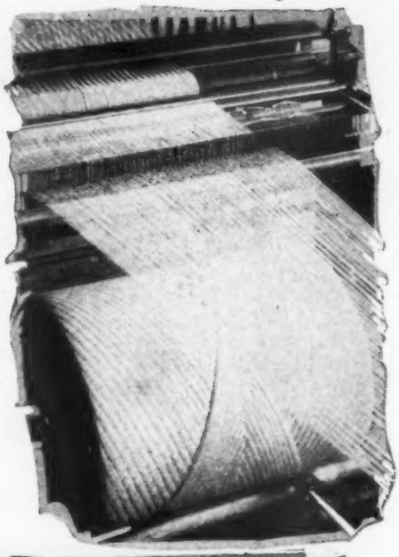
This means the salesman, mill representatives and metallurgists study your order and its requirements—determine for what purpose the steel will be used and how it will be fabricated. Then, on your individual routing card, metallurgists specify the mill routing that will give your sheet steels the properties they need.

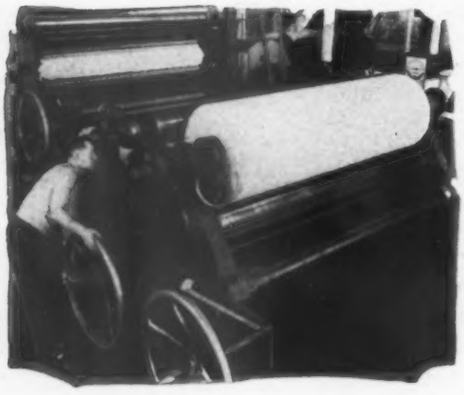
In all these deliberations the Armco mill representative first keeps *your* problems in mind. He is your assurance of a high "Q. C." in the Armco special-purpose steels that go into your products. The American Rolling Mill Company, 3401 Curtis St., Middletown, O.

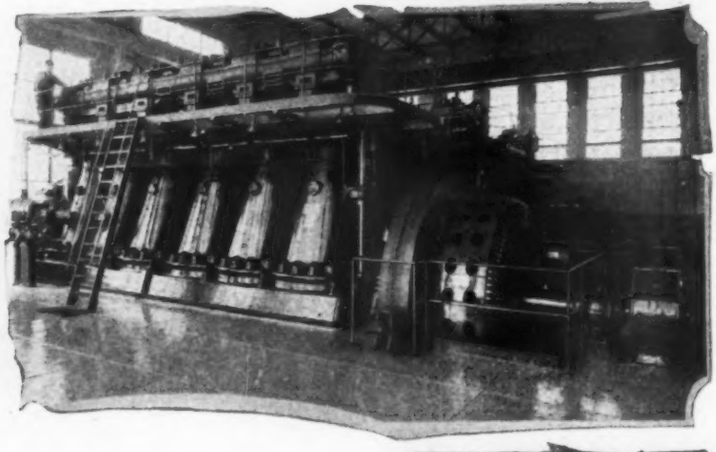
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"No sticking valves . . . negligible cylinder wear — with Tycol DIESEL OILS."

"Absence of sludge and corrosion . . . no wear on bearings — with Tycol RIO TURBINE OILS."

"Superior performance under high-temperature service — with Tycol STEAM CYLINDER OIL."

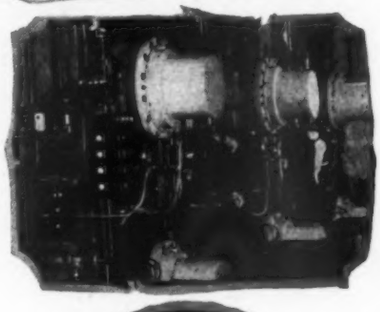
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"Maintenance costs cut 20% . . . since using Tycol E.P. Lubes."

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Let's clean house now— start scrap moving—

FABRICATORS NEED STEEL

STEEL MILLS NEED SCRAP

Here's what you can do to help get much-needed scrap to Steel Mills.

1 ***Check Your Plant and Property*** and appoint someone to earmark every piece of machinery and equipment that can be cut up for scrap.

2 ***Consult Your Local Scrap Dealer*** to learn what size scrap brings highest returns—then flame-cut to size all obsolete machines, structural shapes, pipe, old boilers, and other large pieces.

3 ***Classify and Segregate*** alloy steels and other special materials to be sure they are used to best advantage and to obtain higher prices.

4 ***Move Scrap Fast*** when it is ready. Sell it, ship it—keep it moving.

Linde can help you work out a practicable scrapping program—just call our nearest office.

•

To help you identify the common metals for proper scrap classification, we will be glad to send you, without charge, as many copies as you need of the wall charts "Identifying Metals by Spark Testing" (ask for form 4666) or "Simple Tests for Identifying Metals" (ask for form 2299).

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Unit of Union Carbide and Carbon Corporation

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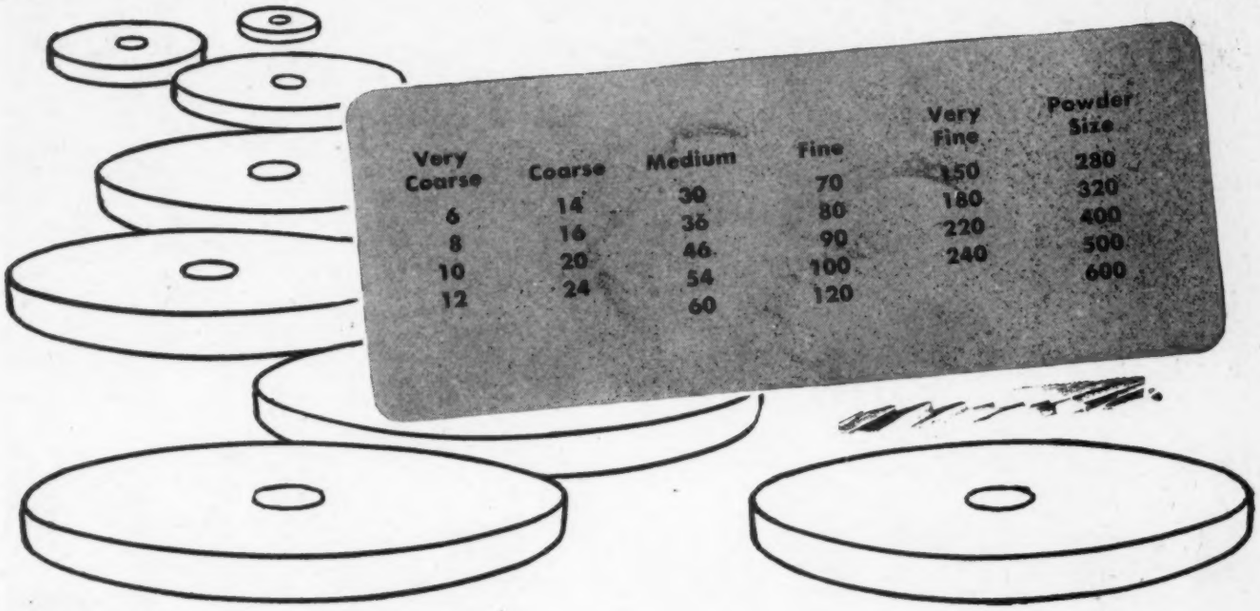


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How do you tell which grit to use?



Listed is a commercial classification of standard abrasive grit sizes. They come in a wide range... from 6 classified as very coarse to 600 classified as powder size. And, the variety is further extended by special sizes and combinations. Yet, each one is designed to do a specific job better than any of the rest.

To complicate correct choice even more, there is a long list of variable factors to consider. Among these, you'll find wheel speed, machine condition, specified tolerances, material analysis, related production schedules, and a host of others.

The correct selection hinges on the review which is given to all the controlling factors. Yet...grinding efficiency and economy depend on the right answer.

That's why the Carborundum Company has put together a practical program... a service now deemed essential by many concerns who have been successful in getting improved grinding in terms of better finishes, or at lower cost.

Your nearest contact to this service is a CARBORUNDUM representative You'll find him willing and helpful. Through a sound knowledge of abrasives and first-hand experience of their use and application in the many plants he contacts, he is able to make intelligent recommendations and suggestions. On the more uncommon problems, he can even call on our Abrasive Engineers who are more fully qualified to tackle the tough problems. And, sometimes, the answer comes from the modern laboratories at CARBORUNDUM—where scientists and technicians probe for new information on abrasives, practices and developments.

Here is a sound approach—not only to getting the right grit—but the right combination of grit, bond, grade, structure and all the other parts that make up a grinding wheel. *Plus* knowledge and experience invaluable in modern grinding methods and procedures. It's easy to use. It incurs no obligation. It makes sense. The Carborundum Company, Niagara Falls, New York.

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if you now wrap your product in paper



A bag may do your job better at lower cost

Yes, if you now wrap your product in paper, you may be wasting valuable time, material and labor in your packaging department that could be saved if you used *special paper bags*. The Bemis Paper Bag Specialty Division is giving manufacturers important savings by developing bags and methods of packing a wide range of products formerly hand-wrapped in paper.

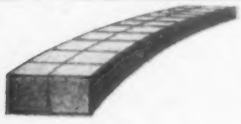
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A waterproof paper bag saves time, materials and labor in wrapping trees. Trees ready for shipment are usually wrapped in paper. Now they may be slipped into special paper bags supplied by Bemis. Time and labor is saved, and the bag makes a better looking package.



4′ x 12′ sheets of wallboard are usually wrapped in heavy paper. A large paper bag has been designed to hold six sheets. This gives savings in labor and materials; frees valuable floor space in the packing department.



100-pound cubes of firebrick clay are unwieldy and hard to wrap in paper. A special paper bag speeds up handling and provides a more efficient protective covering.

SUBMIT YOUR PACKAGING PROBLEMS TO BEMIS

No matter what type or size of product you make, if you now hand-wrap in paper you may find new packaging economy in a *special paper bag*. Call Bemis today. There is no obligation.

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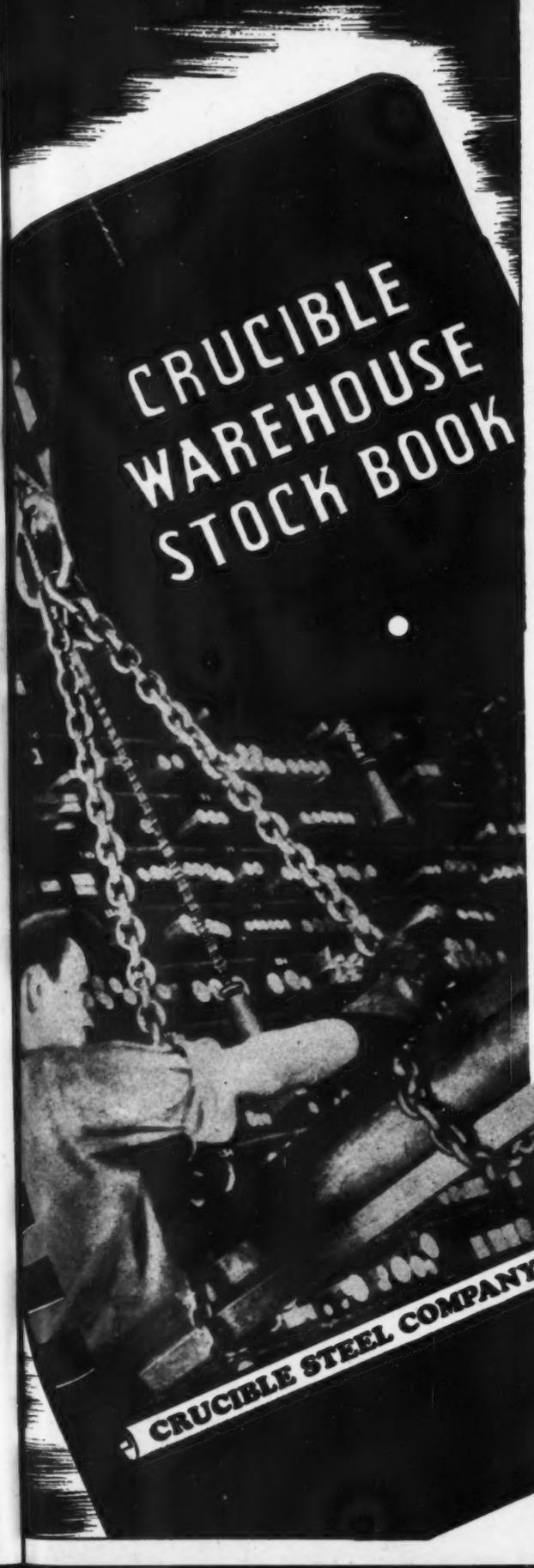
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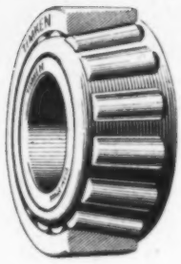
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STREET_____

CITY_____ ZONE_____

STATE_____

WE MOUNT IT—
WE HOUSE IT—
WE SEAL IT—



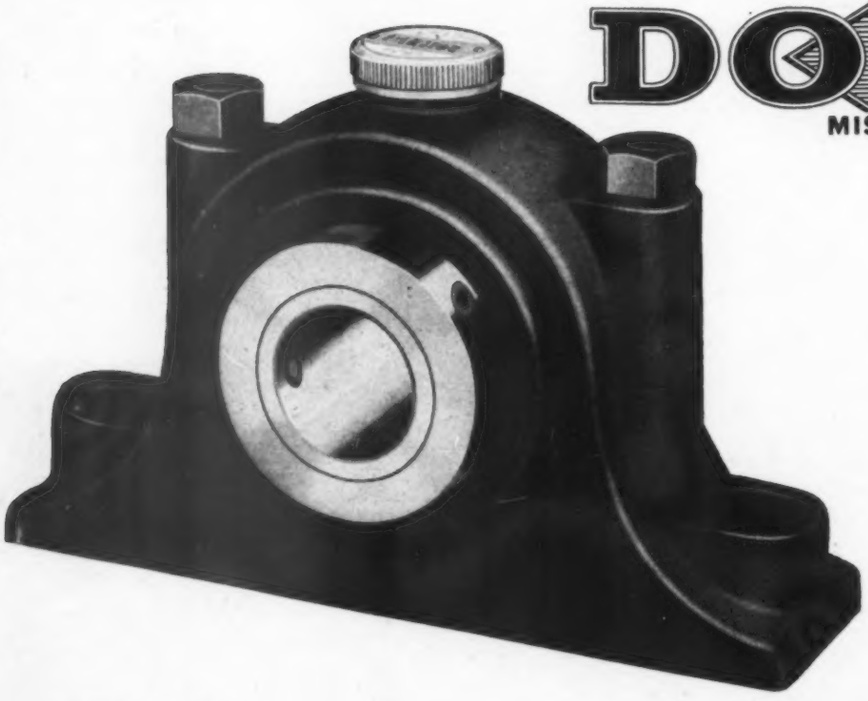
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Fill out the coupon below and mail it—for the shortest route to answers to many fastenings problems. Maybe you think that cold-forging wouldn't save for you—but if you use large quantities of fastenings, get the facts on what Scovill can do. You may be surprised at what can be done—economically. For production efficiency, also contact Scovill for SEMS Washer Screw Assemblies, PHILLIPS Recessed Head Screws, and CLUTCH HEAD Screws. Mail the coupon today!



TELEPHONE—This special brass stud is an important part of a telephone transmitter. Do you use fastenings in mass production? Get the facts on Scovill.

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POWER TRANSMISSION—Special copper transformer stud used in high tension power transmission. Another Scovill cold-forging job that solved a problem—saved money for a customer.

SCOVILL MANUFACTURING COMPANY
WATERVILLE SCREW PRODUCTS DIVISION
WATERVILLE 48, CONN. TEL. WATERBURY 3-3151

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WATERVILLE 48, CONN.

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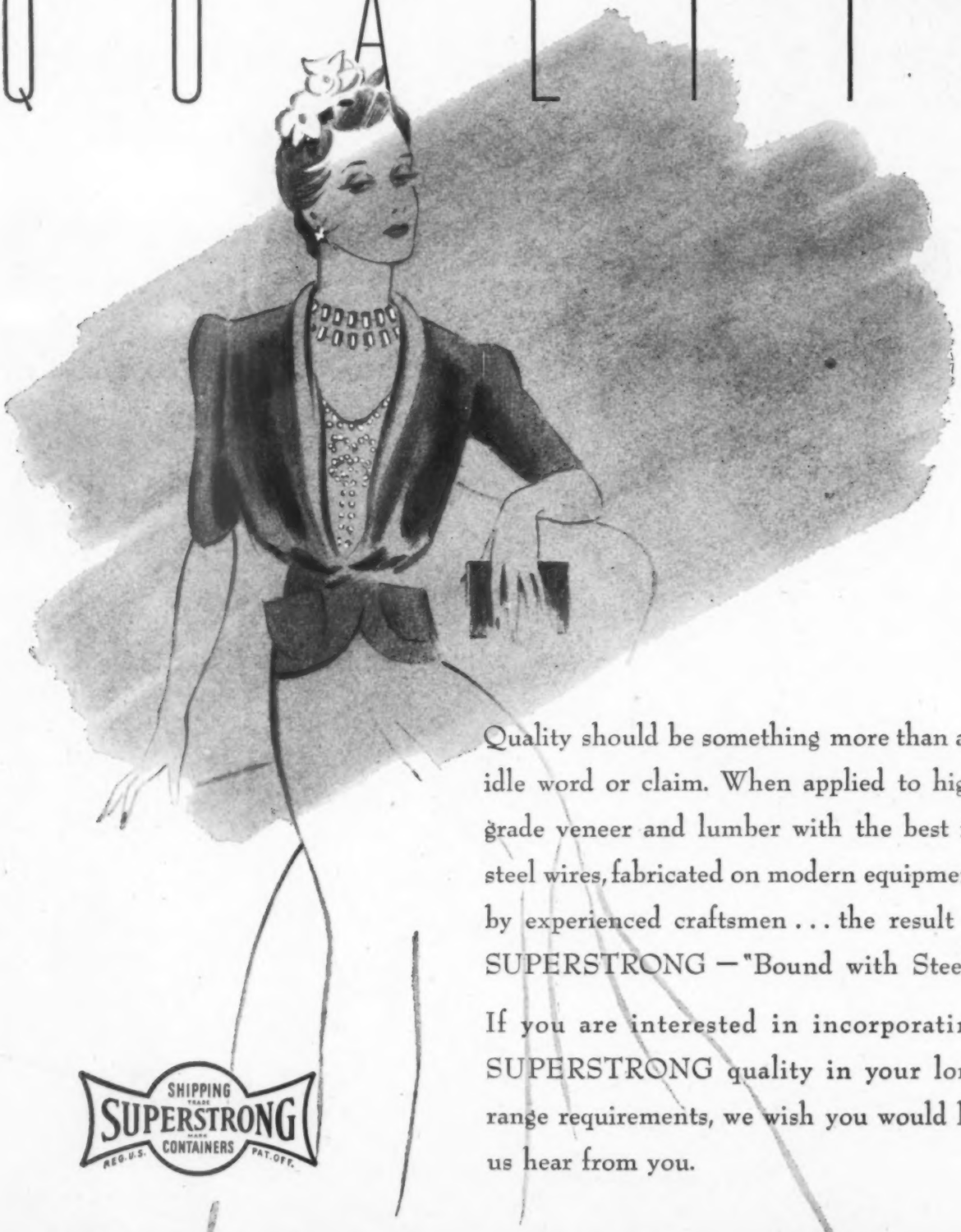
- ☐ Special Cold-forged Fastenings
- ☐ SEMS Washer Screw Assemblies
- ☐ PHILLIPS Recessed Head Screws
- ☐ CLUTCH HEAD Screws

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QUALITY



Quality should be something more than an idle word or claim. When applied to high grade veneer and lumber with the best in steel wires, fabricated on modern equipment by experienced craftsmen . . . the result is SUPERSTRONG — "Bound with Steel."

If you are interested in incorporating SUPERSTRONG quality in your long range requirements, we wish you would let us hear from you.

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS REG. U.S. PAT. OFF.

RATHBORNE, HAIR AND RIDGWAY COMPANY
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

"STRAIGHT LINE" WIRE CLEANING

the Roebling way

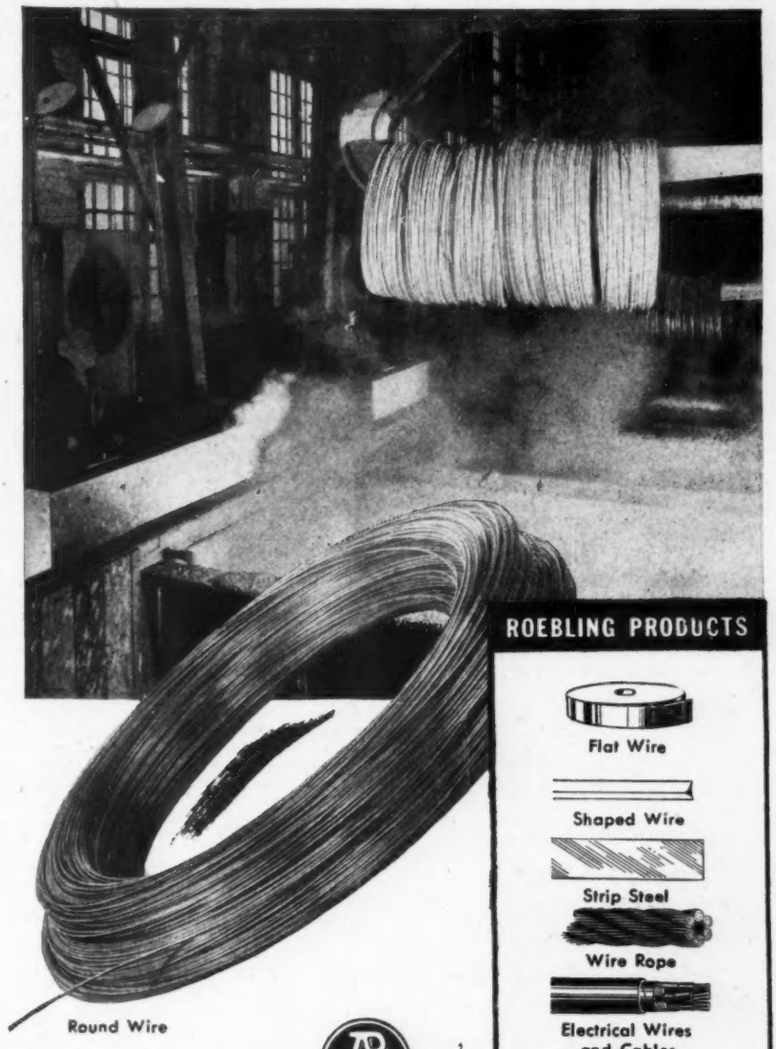
. . . one of many important steps that assure *TOP QUALITY WIRE*

WIRE THE WAY YOU WANT IT . . . meeting "specs" to the last decimal . . . that's what you get when you order from Roebling. Every coil is absolutely uniform from one end to the other in grain structure, dimension, temper and finish.

At Roebling, many things combine to achieve top wire quality. One is modern, specialized equipment that permits advanced production methods. An example is the "straight line" wire cleaning operation shown, where scale is removed and a protective coating applied which also serves as a wire drawing lubricant.

Improved facilities like these, manned by workmen experienced in sound Roebling techniques, can meet your needs in stride . . . whether it's for round, flat or shaped wire or strip steel. And behind them stands the Roebling name, symbol for over a century of the finest in wire.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
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Round Wire

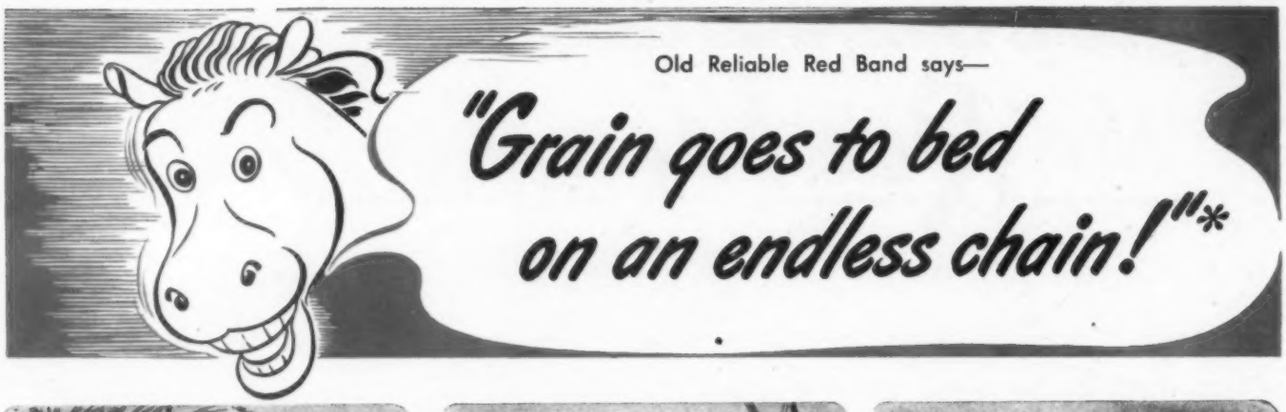
ROEBLING PRODUCTS

Flat Wire
Shaped Wire
Strip Steel
Wire Rope
Electrical Wires and Cables
Woven Wire Fabrics

Manufacturers of Wire Rope and Strand • Fittings • Slings • Aircord, Aircord Terminals and Air Controls • Aerial Wire Rope Systems • Ski Lifts • Electrical Wire and Cable • Suspension Bridges and Cables • Screen, Hardware and Industrial Wire Cloth • Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Lawn Mowers.

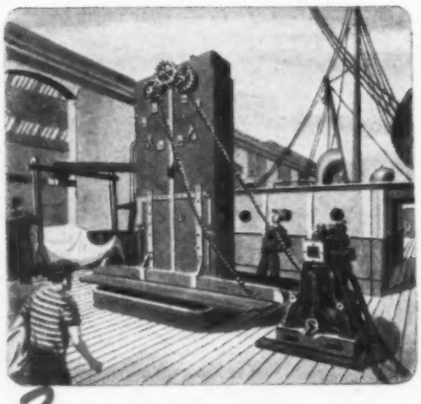
ROEBLING

PACEMAKER IN WIRE PRODUCTS

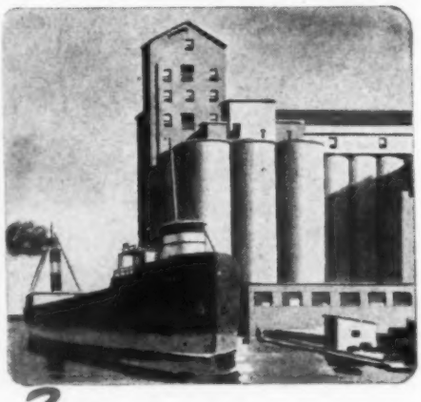




1 **Early American settlements** had community granaries like those of Biblical times for winter storing of grain. In 1834, the first modern grain elevator was built in Buffalo. By 1866, bulk handling of grain was an established industry.



2 **Chains of buckets** were run, by cumbersome ropes and countershafts, from one central power source on the ground floor. In 1896 came the biggest improvement to date—individual motors were developed to drive each conveyor unit separately.



3 **Today,** with electrical horsepower, a Buffalo grain elevator can unload grain from lake carriers at the rate of 85,000 bushels an hour. Howell has been building specialized motors for grain elevators and other industries since 1915.

Have you a hard job for Horsepower?

Perhaps you have a process where extremely high or low temperatures exist—excessive moisture—high starting torque—or just a real tough job for a motor. Then get a protected industrial type motor that's built to "take it."

Here's why industrial type Howell Motors stand up:

(1) Precision-built of finest materials, with copper or bronze rotors, and completely insulated.

(2) Smooth-operating because statically and dynamically balanced.

(3) Designed for the toughest tasks in industry—consequently better-performing on *all* jobs.

See your nearest Howell Representative for your needs in specialized or standard motors up to 150 h.p. Remember, you pay no more for industrial type Howell Motors—and you always get top quality for your money.



Howell Protected Type Motors available in sizes 5 h.p. and smaller. Also other sizes of Howell industrial type motors available up to 150 h.p.

HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915



ONE mark of the Bunting Authorized Distributor is ability to deliver. Bunting Precision Bronze Bars and Standard Stock Bearings are a part of his capital invested in your community. Try him.

The Bunting Brass & Bronze Company, Toledo 9, Ohio.

Branches in principal cities.



Bunting

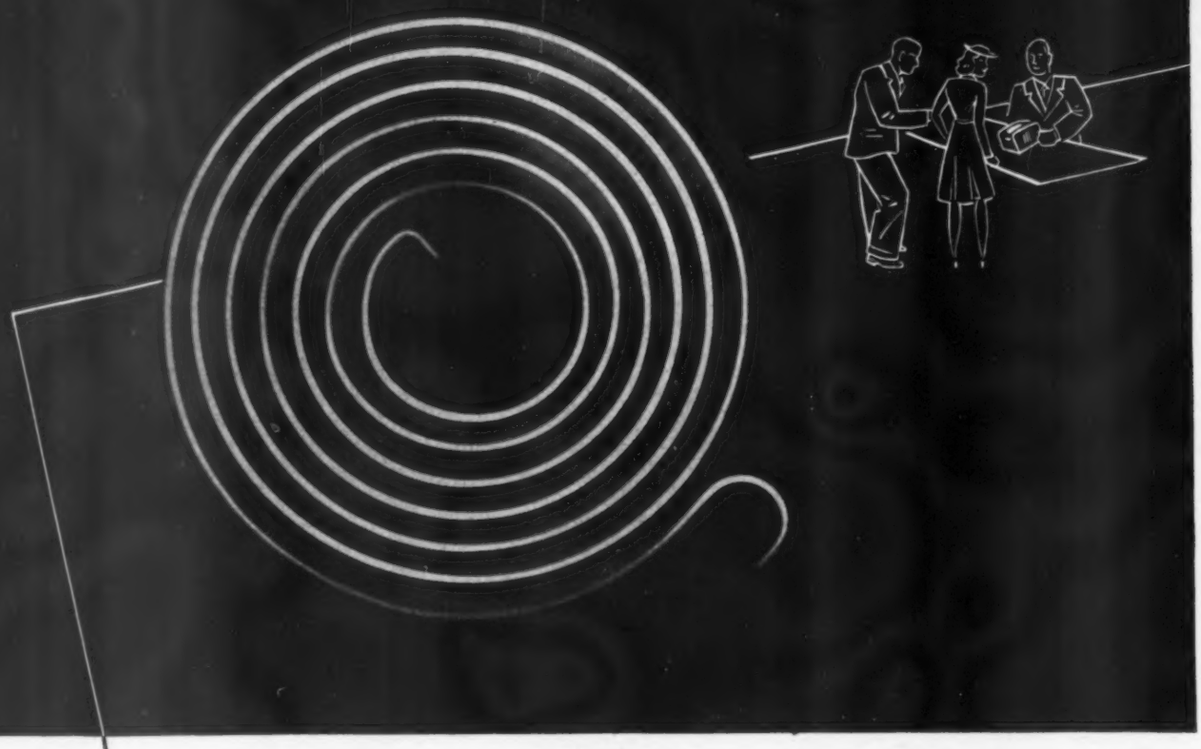
BRONZE BEARINGS

BUSHINGS

PRECISION BRONZE BARS

CAN A SIMPLE THING . . . . . LIKE A BETTER SPRING . . . . . .

help your sales?



SPRINGS
SMALL STAMPINGS
WIRE FORMS

SPRING STEEL

TODAY there's *new life* to spring performance. More uses for metals, refinements in heat-treating, improvements in production methods—all add up to better operation, greater dependability. Each of these factors influences consumer acceptance, whether it's a machine tool, office or home appliance, or pleasure vehicle.

Sometimes, just a penny's-worth means the difference between good-enough and better springs. So safeguard user satisfaction—let Barnes engineers give your springs up-to-date analysis. They are alert to your needs, looking ahead to improved mechanical performance, a better product for more sales.

Barnes-made springs
Engineered Pep and Power

WALLACE BARNES COMPANY
Division of Associated Spring Corporation
Bristol Connecticut

FOR BETTER BATCH BEHAVIOR

Use Alcoa Pig and Ingot and be assured, when making mixes, that the next batch will behave just like the previous one . . . right to given specifications.

Assured, because into their production go more years of experience than can be found anywhere else . . . 58 years of knowing how to make them consistently sound, uniform, and free from inclusions.

A better aluminum to start with . . . your castings will be better at final inspection. Where to place your order? Call your nearby Alcoa Sales Office. Or write ALUMINUM COMPANY OF AMERICA, 1931 Gulf Bldg., Pittsburgh 19, Pa.



ALCOA ALUMINUM

ALCOA ALUMINUM

MILLIONS

of

MACHINE FINISHED CAST BRONZE BEARINGS



Specify JOHNSON GENERAL PURPOSE BEARINGS

Now Ready for

IMMEDIATE DELIVERY

Catalogue

76 Pages, lists and describes the most Complete Bronze Bearing Service in the world. Write for your FREE copy.

Now you can secure ALL your requirements in finished bronze bearings . . . *without delay*. Adequate stocks of over 850 sizes of Johnson General Purpose Bearings are now located in all of our various branches and with leading Industrial Supply Distributors throughout the nation.

Johnson General Purpose Bearings are fully machined, ready for immediate installation. Every item in the line is of the highest quality bearing bronze available. Oil holes, slots or oil grooves can be easily, quickly and economically added.

Why not check your immediate needs NOW? Permit us to show you our excellent service. The bearings will prove their quality through performance.

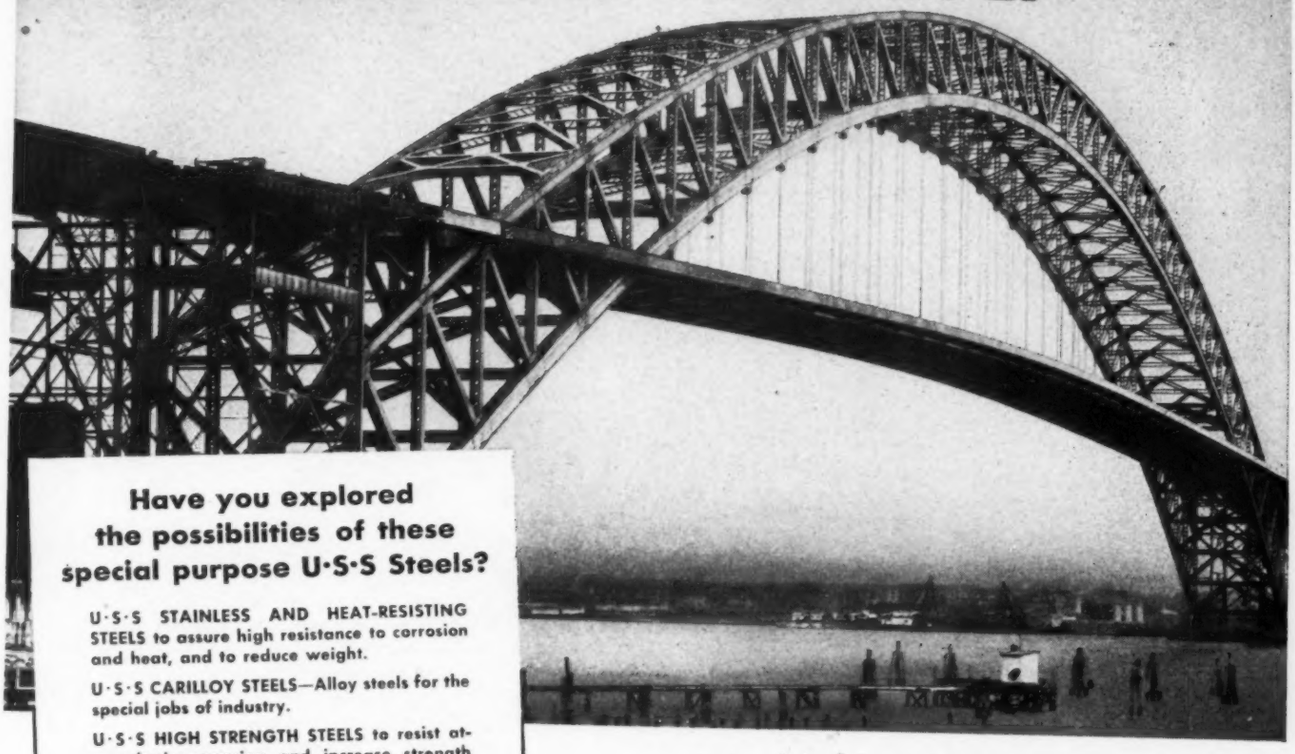
JOHNSON BRONZE

SLEEVE BEARING HEADQUARTERS

The MOST COMPLETE SLEEVE BEARING SERVICE in the WORLD

450 S. MILL STREET NEW CASTLE, PA.

Because Steel is STRONG



Have you explored the possibilities of these special purpose U·S·S Steels?

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S CARILLOY STEELS—Alloy steels for the special jobs of industry.

U·S·S HIGH STRENGTH STEELS to resist atmospheric corrosion and increase strength without adding weight.

U·S·S COPPER STEEL to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S ABRASION-RESISTING STEEL to combat wear and friction.

U·S·S HOT-ROLLED AND COLD ROLLED STEELS to provide the basic advantages of steel, plus maximum economy in accordance with the needs of each job.

U·S·S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.

U·S·S VITRENAMEL—Sheets designed especially for porcelain enameling.

U·S·S ELECTRICAL SHEETS for motors, generators and transformers.

9 times out of 10 STEEL will do it better

USS STEEL — UNITED STATES STEEL

. . . it is the one BEST material for any application requiring high strength-weight ratio and superior resistance to shock, fatigue, and wear

BECAUSE steel is strong and economical . . . it is the basic fabricating and construction material for the entire world.

Because steel combines strength with other qualities . . . toughness, hardness, elasticity, ductility . . . in almost any degree or combination . . . it is the most useful, workable, versatile metal available to industry.

But . . .

To get the most out of steel, to make steel deliver the values built into it by the steelmaker, you've got to choose the right steel for the job. And you can't do this by rule of thumb.

That's why, when you are ready to choose and buy your steel, it will pay you to check with U·S·S metallurgical experts. Tell us what you want the steel to do and we'll help you select a steel with the right combination of qualities to do the job best at the lowest cost to you and your customers.

CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, *San Francisco, Pacific Coast Distributors*
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Birmingham, Southern Distributors
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL



Better packaging brings bigger profits, and today's leaders in the retail store field are spending more time, thought and money on the choice of "take-home" boxes.

Packages — whether the patented "pop-up" pie box of the corner bakery or the colorfully decorated box from milady's smart specialty shop — build increased sales. Old Dominion retail boxes, the favorite of the trade, are achieving this at lowered cost because of "know-how" and volume production. It's another good reason why you should investigate Old Dominion's complete line of planned packages. Your products deserve them.

Write today for completely illustrated RETAIL BOX FOLDER, to Old Dominion Box Company, Inc., Dept. 35, Charlotte, North Carolina.

OLD DOMINION *Box Company Inc.*

PLANTS LOCATED THROUGHOUT THE SOUTH
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228 EAST 45th ST., NEW YORK 17, N. Y.
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PRECISION BUILT PAPER BOXES AND PACKAGING MATERIAL



"...ALL THIS AND A DOG HOUSE TOO"

"The difficult we do immediately; the impossible may take a little longer"... with such a spirit, the automotive industry has changed the "horseless carriage" into a sleek, powerful beauty; and could, no doubt, even produce the parlor, bedroom and bath masterpiece shown here, if it were sound.

Right in step with these seven-league strides made in motoring has been the development of the electric storage battery into a highly efficient, long-lasting power source. And pacing this development has been Exide.

There are Exides for every storage battery need. Exides furnish safe, dependable motive power for the efficient, time-saving electric industrial truck and for mine haulage units. They supply power for Diesel engine cranking, emergency lighting and fire alarm circuits. Telephone and telegraph companies, radio stations, railroads, ocean vessels and aircraft use thousands of Exides for many important tasks. And on millions of cars, trucks and buses, they continue to prove that "When it's an Exide, you start."

For 58 years, the name **Exide** has stood for dependability, economy, safety and long-life. Information regarding the application of storage batteries for any business is available upon request.

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

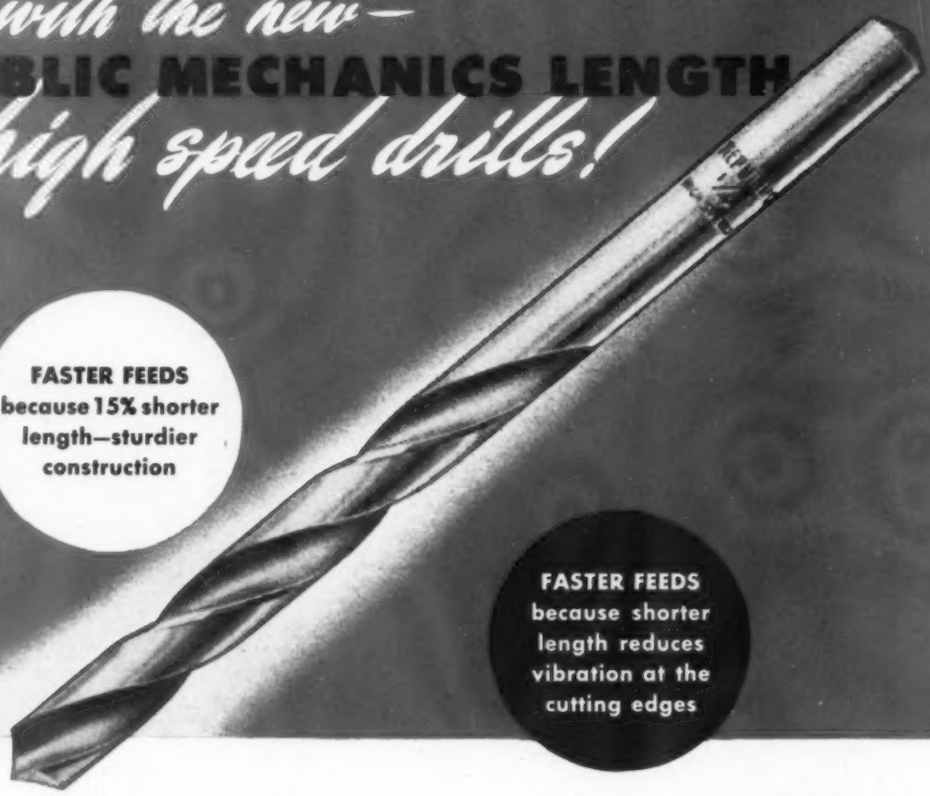
Exide
BATTERIES

faster feeds...

with the new—

REPUBLIC MECHANICS LENGTH

...high speed drills!



FASTER FEEDS because 15% shorter length—sturdier construction

FASTER FEEDS because shorter length reduces vibration at the cutting edges

● It has been known for years that the conventional Jobbers Length twist drill is not designed for maximum performance under most modern plant conditions. This is because the Jobbers Length drill was designed over forty years ago—for much slower speeds and feeds.

Republic engineers designed the new Mechanics Length High Speed Drill to meet the need for a shorter length stock drill. It is 15% shorter than the conventional Jobbers Length; and the shorter flute results in a sturdier drill, with minimum vibration at high speeds and much greater drill life on practically every job. For portable drilling and screw machine work, the great advantage of the Mechanics Length is obvious, since shorter drills have been used on this work for many years. 15% shorter length means 15% lower price, too!

get your copy!

New bulletin gives sizes, prices, advantages of the new Republic Mechanics Length Drills...Use the coupon to get your copy.



Republic

DRILL & TOOL COMPANY

CHICAGO 7, ILLINOIS NEW YORK 13, NEW YORK

BOSTON • CLEVELAND • DETROIT • LOS ANGELES

World's Largest Exclusive Manufacturer of Twist Drills

REPUBLIC DRILL & TOOL CO.
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Purchasing Previews



A Washington Report . . . . . for Purchasing Agents

November 1, 1946

OWMR LOOKS INTO CRYSTAL BALL . . . .

Office of War Mobilization and Reconversion has injected a note of caution into its most recent report and forecast of economic developments.

A major key to business conditions in the 12-month period ahead, according to OWMR studies, will be the rate of industrial inventory accumulation. The report states:

"Spending for additional inventories will probably continue for a time, although it is doubtful if the present rate can continue for very long."

There is the note of speculation that whatever void may be created by a drop in the rate of inventory accumulation will be compensated for by a considerable expansion in deferred commercial construction.

General thinking is that business prosperity will continue of itself for a time aided by tax and capital expenditure considerations as long as they are favorable. Thereafter, direct Government expenditures through Federal construction and public works will be thrown into the breach.

Another prop to the economy, according to OWMR economists, is the additional wage raises which are being offered labor to forego further strikes in basic industries. The higher wages are held to be a potent force for sustaining purchasing power.

While Government economists have not been outstandingly successful in charting business trends, the OWMR caution is significant. It will serve to make further wage boosts more palatable to merchandisers, whose major problem is to sustain a large volume of sales.

Producers and fabricators will look with suspicion at the thesis that deflation can be warded off by notching wages up further. Big question is whether the Government program buys off another round of strikes. Economic timetables and demand factors can be thrown off by work stoppages.

SHIFTS IN COMMERCE DEPARTMENT POLICY . . . .

Shift in the administration of the Department of Commerce will not mean a major change in the domestic program of the department, with the possible exception of services which had been projected for small business.

The Department of Commerce program to aid small business had been somewhat of a void, in that it was largely an inheritance from the subcontracting and Smaller War Plant wartime program. By making special concessions in placing contracts to favor smaller manufacturers during the war, the Government was able to give a positive stimulus to such producers. Now, the basic role for Government as it affects the question of big business versus small business is a negative one -- exercised through the Department of Justice administration of monopoly laws.

Major change in the Department of Commerce program is likely to be in the approach toward international trade.

The old FEA organization was at odds with the State Department's handling of foreign trade policies.

Secretary W. Averell Harriman is more likely to see eye to eye with State Department policy on foreign trade.

PURCHASING SPEED-UP INDICATED . . . .

Large expenditure by industry for new equipment during the reconversion period means that flow of materials will have been increased considerably over prewar and wartime standards.

Robert R. Wason, president of the National Association of Manufacturers, pointed up this development in a recent speech in which he indicated that the emphasis has been to install faster feeds and faster speeds in plants.

Obvious deduction is that with materials being processed at a faster speed, procurements will have to be geared to a faster rate. All of which emphasizes the function of the purchasing agent in the increase of productivity.

Labor costs have increased, but the speed-up in machine times is expected to compensate for the higher costs. However, this development is dependent, on the one hand, on the technical skill of PA's, whose function it is to feed materials into the plant, and on the other, on sales staffs which siphon off production into the channels of trade. Machine efficiency and management techniques will be the instruments of increased productivity.

GOVERNMENT WATCHES INVENTORY HOARDING . . . .

Government still talks in terms of restricting inventories on the part of hoarders looking for an accretion in values.

Special instances are cited where, due to world shortages and removal of controls, speculators attempted to run up the value of their holdings.

Government sources cite the large withholdings of hides and leather, which had been purchased when OPA ceilings were temporarily suspended and were held off the market after the re-imposition of controls "to force an upward revision of prices."

These special instances are being used by Government agencies to justify continuance of Priorities Regulation 32, which imposes specific limits on the size of permitted inventories.

Recession after World War 1 came with the sharp write-down in value of the excessive inventories which had been accumulated by industry at high prices. Government economists are watching accumulation of inventories with a suspicious eye, but feel that raw and semi-processed materials cannot drop sharply in value, and that fabricated consumer goods can be moved to the consumer quickly enough to avoid a major drop in inventory values.

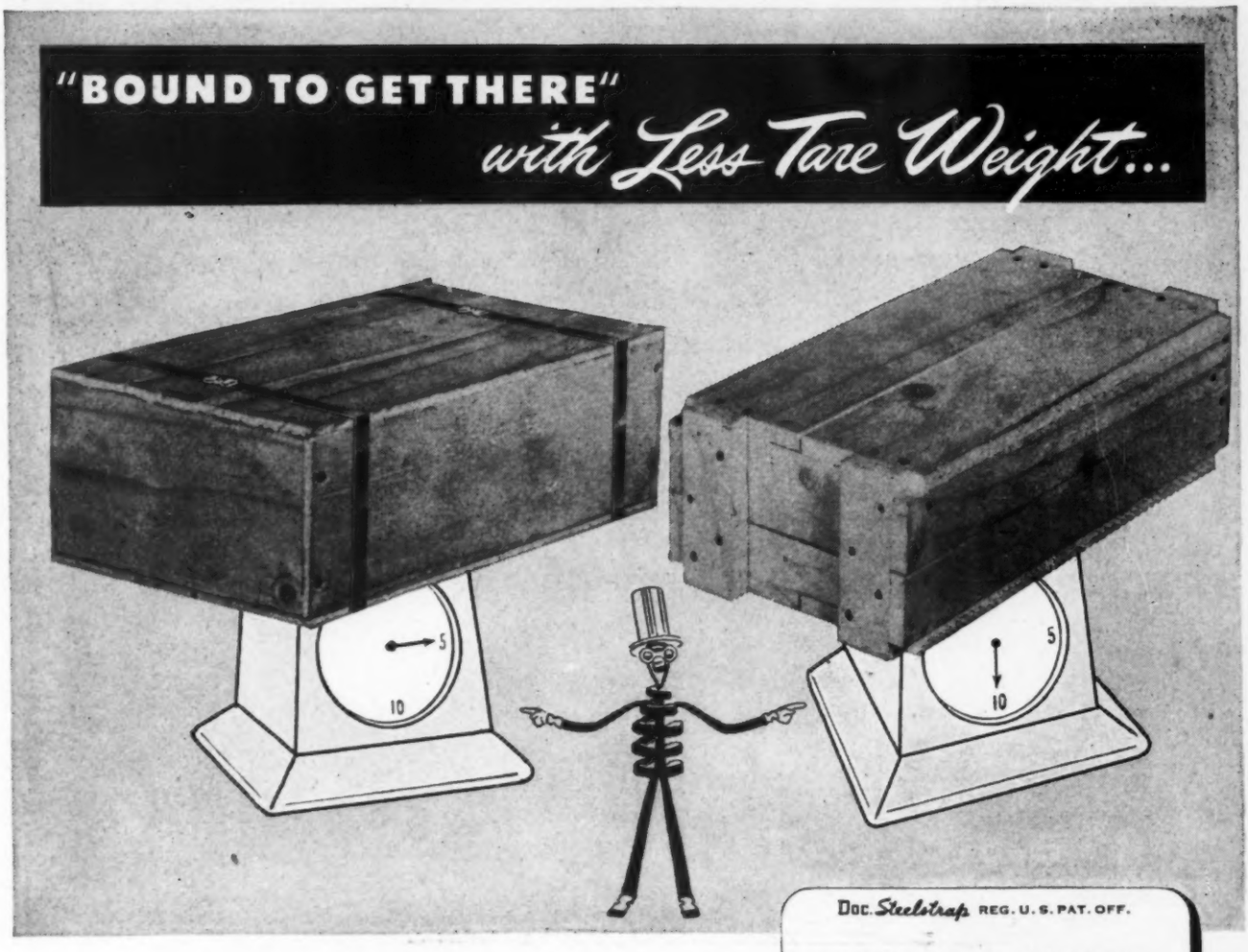
BRAND NAMES FOR AN "ENRICHED SOCIETY" . . . .

Importance of the trade-mark in the nation's economy was emphasized by Casper W. Ooms, U. S. Commissioner of Patents, in an address before the Association of National Advertisers.

Commissioner Ooms pointed out:

"Only in an enriched society does advertising of brand names become important. As each mark is established in its field, the competitor who would enter that field assumes a new burden of not only invoking the customer to purchase the commodity bearing his brand name but of weaning that customer away from some other possible source of the same goods. The competition that follows assures that each producer makes certain that the goods which bear the brand name will meet the promise that the advertiser has held out for it. The advertiser and producer are thus in turn the custodian of the brand name, each insuring that the promise of the advertising is faithfully kept and that the endorsement carried by the brand name is honestly fulfilled."

"BOUND TO GET THERE" *with Less Tare Weight...*



DOC. *Steelstrap* REG. U. S. PAT. OFF.

Because of *Acme Steelstrap*

Of necessity, one of the two shipping cases above is made of thicker, heavier, costlier lumber.

The other, of lighter construction, is less expensive because it's Acme Steelstrap reinforced. It also affords better product protection.

Less tare weight, resulting in lower cost packing and cash money saved, is just one of several Acme Steelstrap advantages.

Investigate now and learn the complete story. You'll find Acme Steelstrap and methods provide thriftier, more efficient shipping and more protection for *your* products.

50% LESS LUMBER EFFECTS 47% SAVING IN COST

A well-known shipper says: ". . . for some time now in shipping our merchandise, we have used various Acme Methods in combination with Acme Steelstrap, and kept close tab on their performance. Average results were:

42% reduction in weight
50% less lumber used
47% savings in cost!"

NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11

ACME STEEL COMPANY

ACME STEEL CO. CHICAGO



BUCKEYE BEARINGS are stocked.....

from coast to coast for your convenience

● BUCKEYE'S 1088 SIZES of fully finished ready-to-use bearings,—156 sizes of semi-finished cored bars turned on the O D only, and 256 sizes of rough cast bars, both in the popular 13" length introduced by Buckeye, are regularly stocked by leading dealers, in the important industrial markets for your convenience.

Manufactured from selected materials under Buckeye's rigid control of charging ratios and melting and pouring temperatures, these bearings measure up fully to Buckeye's exacting specifications. Each is a quality product, free from porosity, and accurately dimensioned within the required limits, assuring speedy, easy assembly and long efficient service. Send for the Buckeye catalog and order Buckeye Bearings by name from the Buckeye distributors.

BADGER BALL & ROLLER BEARING • Milwaukee, Wis.
BADGER BEARING COMPANY • • • • • Chicago, Illinois
BOBKER BEARING COMPANY • • • • Jersey City, N. J.
BOBKER BEARING COMPANY • • • • • • Newark, N. J.
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CANADIAN BEARING SUPPLY INC. • Hamilton, Ont., Can.
CARTER, MILCHMAN & FRANK INC. • New York, N. Y.
CROSS BROS. COMPANY, INC. • • • Rochester, N. Y.
CUTTER, WOOD & SANDERSON CO. • Cambridge, Mass.
A. H. LEU SALES CO. • • • • • • • • • St. Louis, Mo.
LINDQUIST HARDWARE COMPANY • Bridgeport, Conn.
PITTSBURGH ENG. & SUPPLY CO. • • Pittsburgh, Pa.
S. H. POOLEY BELTING COMPANY • • • Buffalo, N. Y.
SLAYSMAN COMPANY • • • • • • • • • Baltimore, Md.
SMITH-COURTNEY COMPANY • • • • • Richmond, Va.
STRONG, CARLISLE & HAMMOND CO. • Cleveland, Ohio
R. R. STREET & COMPANY, INC. • • Chicago Illinois
TRISTATE CORPORATION • • • • • • Philadelphia, Pa.

Buckeye

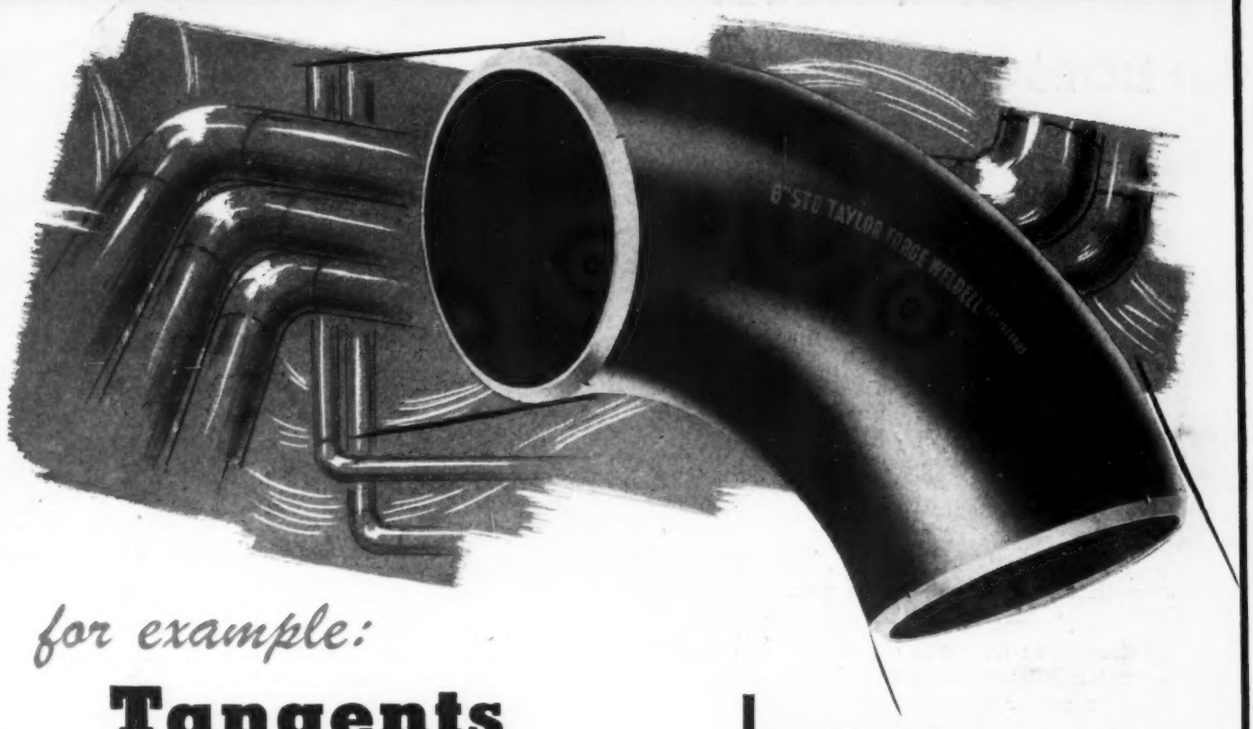
BRASS AND MANUFACTURING COMPANY

BRONZESMITHS SINCE 1900

6412 HAWTHORNE AVE. CLEVELAND 3, OHIO

BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT
IN ANY RECOGNIZED BEARING METAL ANALYSIS

WeldELLS



for example:

Tangents

If they did not have tangents, WeldELLS would not have *everything*. These straight segments on each end of every WeldELL achieve three things that only tangents can accomplish:

1. They make lining up easier
2. They keep the weld out of the zone of greatest stress
3. They facilitate the use of slip-on flanges

Providing tangents entails extra manufacturing operations, but this is simply typical of the extra-value you get in WeldELLS and other Taylor Forge Fittings for pipe welding.

A number of these extra-value features are listed here. Note that they are combined only in WeldELLS!

TAYLOR FORGE & PIPE WORKS
General Offices & Works: P. O. Box 485, Chicago
New York Office: 50 Church Street
Philadelphia Office: Broad Street Station Bldg.
Los Angeles Office: Oviatt Bldg.

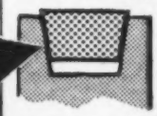
WeldELLS alone combine these features:

- Seamless—greater strength and uniformity.
- Tangents—keep weld away from zone of highest stress—simplify lining up.
- Precision quarter-marked ends — simplify layout and help insure accuracy.
- Selective reinforcement — provides uniform strength.
- Permanent and complete identification marking—saves time and eliminates errors in shop and field.
- Wall thickness never less than specification minimum—assures full strength and long life.
- Machine tool beveled ends—provides best welding surface and accurate bevel and land.
- The most complete line of Welding Fittings and Forged Steel Flanges in the World — insures complete service and undivided responsibility.

have everything

It's the SIDE OF A V-BELT that DOES the WORK! and GETS the WEAR!

V-Belt In Sheave



Clearly, it's the sides of a V-Belt that do all the gripping on the pulley and get all the wear against the sheave-groove wall. That's why longer life for the sides means longer life for the belt!



That's Why the ★ CONCAVE SIDE is IMPORTANT! (A GATES PATENT)

Look at any V-Belt in its sheave groove and you *see at once* that the sidewall is the part that gets the wear!

The *sidewall* is what grips the pulley. The sidewall picks up the power from the driver pulley, transmits that power to the tension member, then grips the driven pulley and transmits the power to it!

That explains why you have always noticed that the sidewall of the *ordinary* V-Belt is the part that wears out first. Clearly, anything that lengthens the life of the sidewall will lengthen the life of the belt.

The simple diagrams on the right show exactly why the ordinary, *straight-sided* V- Belt gets excessive wear along the *middle of the sides.* They show also why the Patented Concave Side *greatly reduces* sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

Straight Sided V-Belt



FIG. 1

How Straight Sided V-Belt Bulges When Bending Around Its Pulley



FIG. 1-A

You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with Patented Concave Sidewall



FIG. 2

Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt Is Bending Over Pulley



FIG. 2-A

No Bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

★MORE Important NOW Than Ever Before!

Now that Gates Specialized Research has resulted in V-Belts having much stronger tension members—tension members of Rayon Cords and Flexible Steel Cables, among others—the sidewall of the belt is often called upon to transmit to the pulley much heavier loads. Naturally, with heavier loading on the sidewall the life-prolonging Concave Side is more important today than ever before!

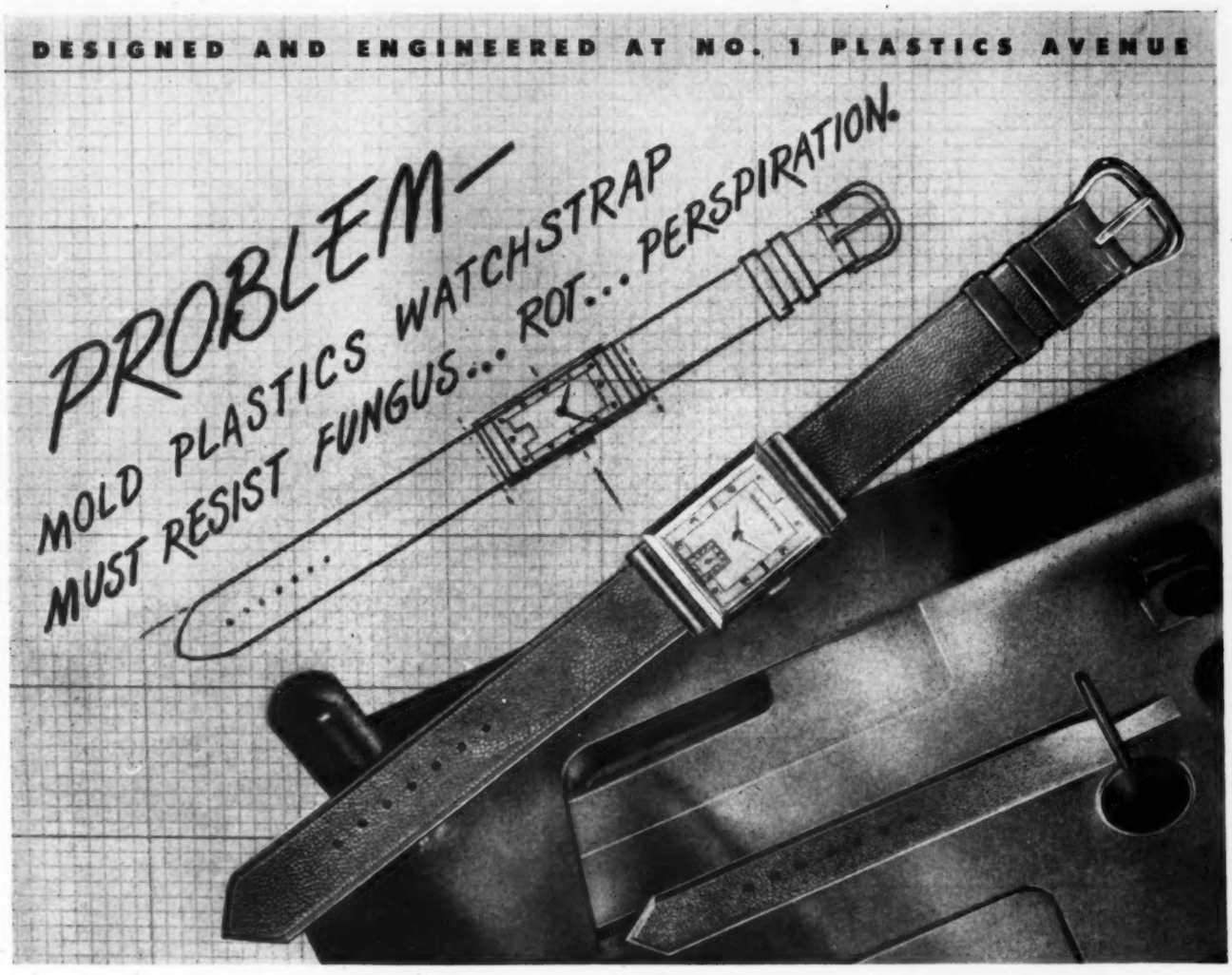
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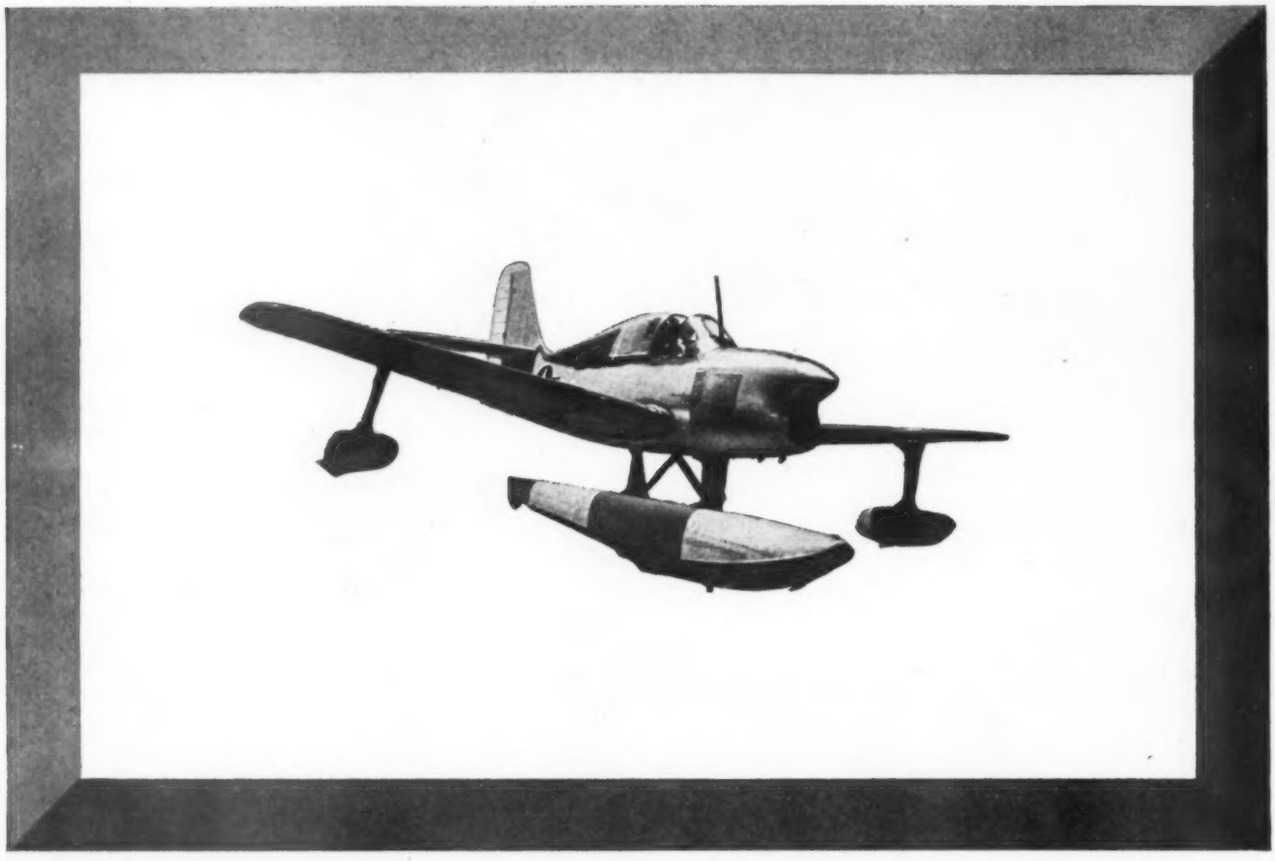
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Fig. 1793—125-pound Iron Body Bronze Mounted Gate Valve with flanged ends, outside screw rising stem, bolted flanged yoke, bronze seat rings and taper wedge solid disc. Also available in All Iron.



Fig. 500—125-pound Bronze Gate Valve with screwed ends, inside screw rising stem, screwed-in bonnet and either taper wedge solid or double disc.

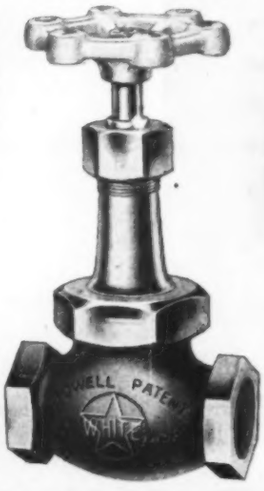


Fig. 1708—200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable, wear-resisting "Powellium" nickel-bronze disc.

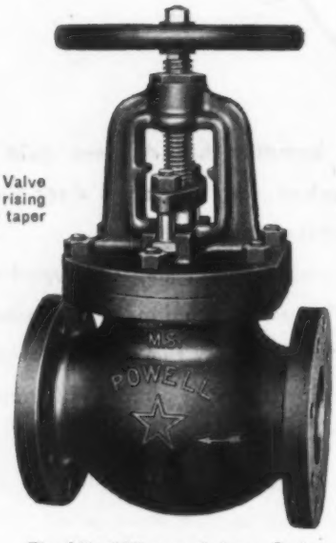


Fig. 241—125-pound Iron Body Bronze Mounted Globe Valve. Has flanged ends, outside screw rising stem, bolted flanged yoke and regrindable, renewable bronze seat and disc. Also available in All Iron.



Fig. 560—200-pound Bronze Regrinding Horizontal Swing Check Valve. Screwed ends, screwed-on cap and regrindable, renewable bronze disc.

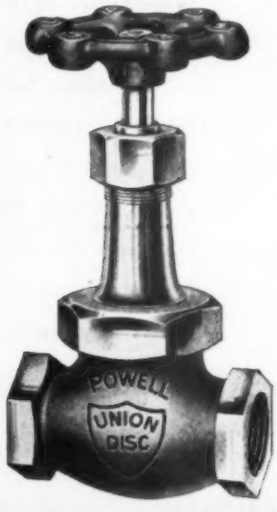


Fig. 150—150-pound Bronze Globe Valve with screwed ends, union bonnet and renewable composition disc.

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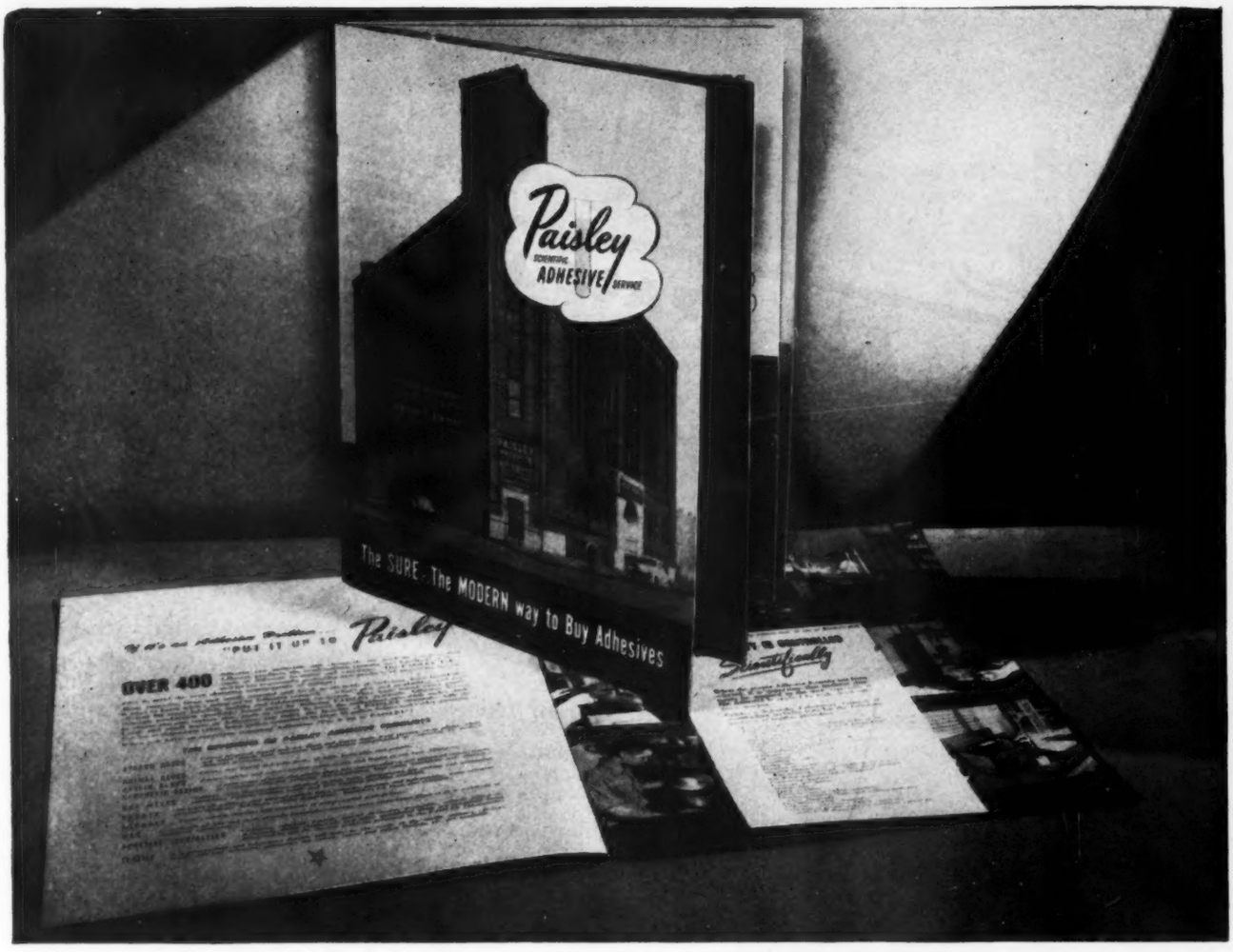
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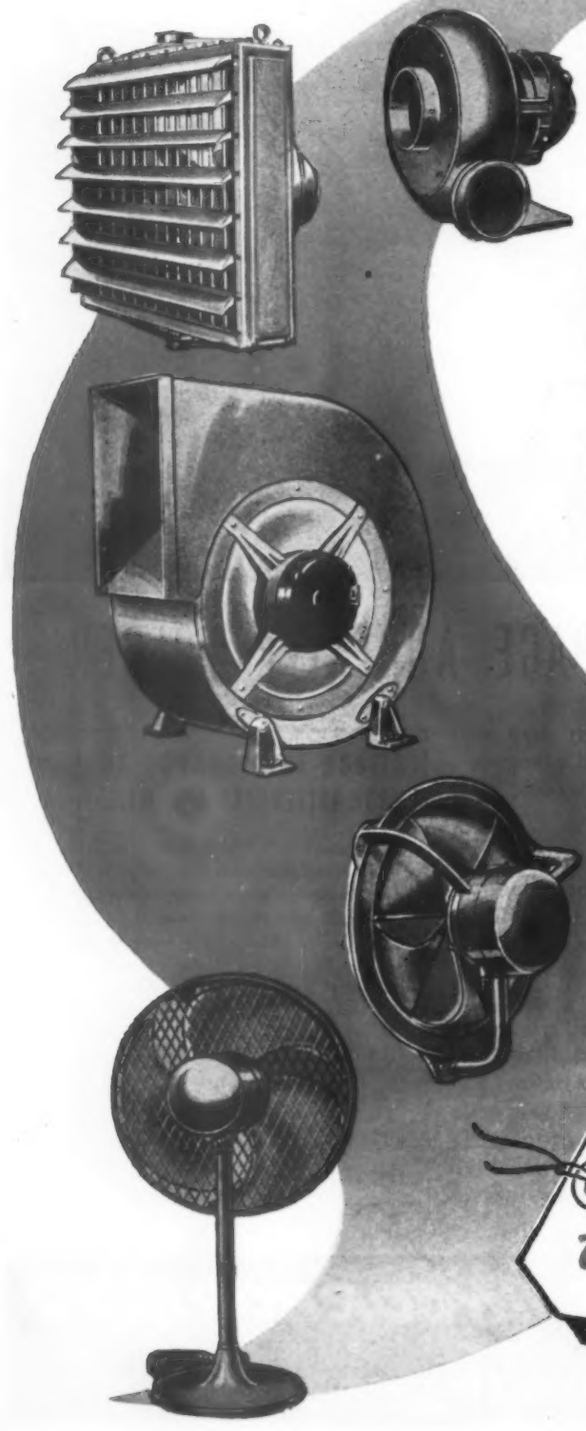
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NOVEMBER, 1946

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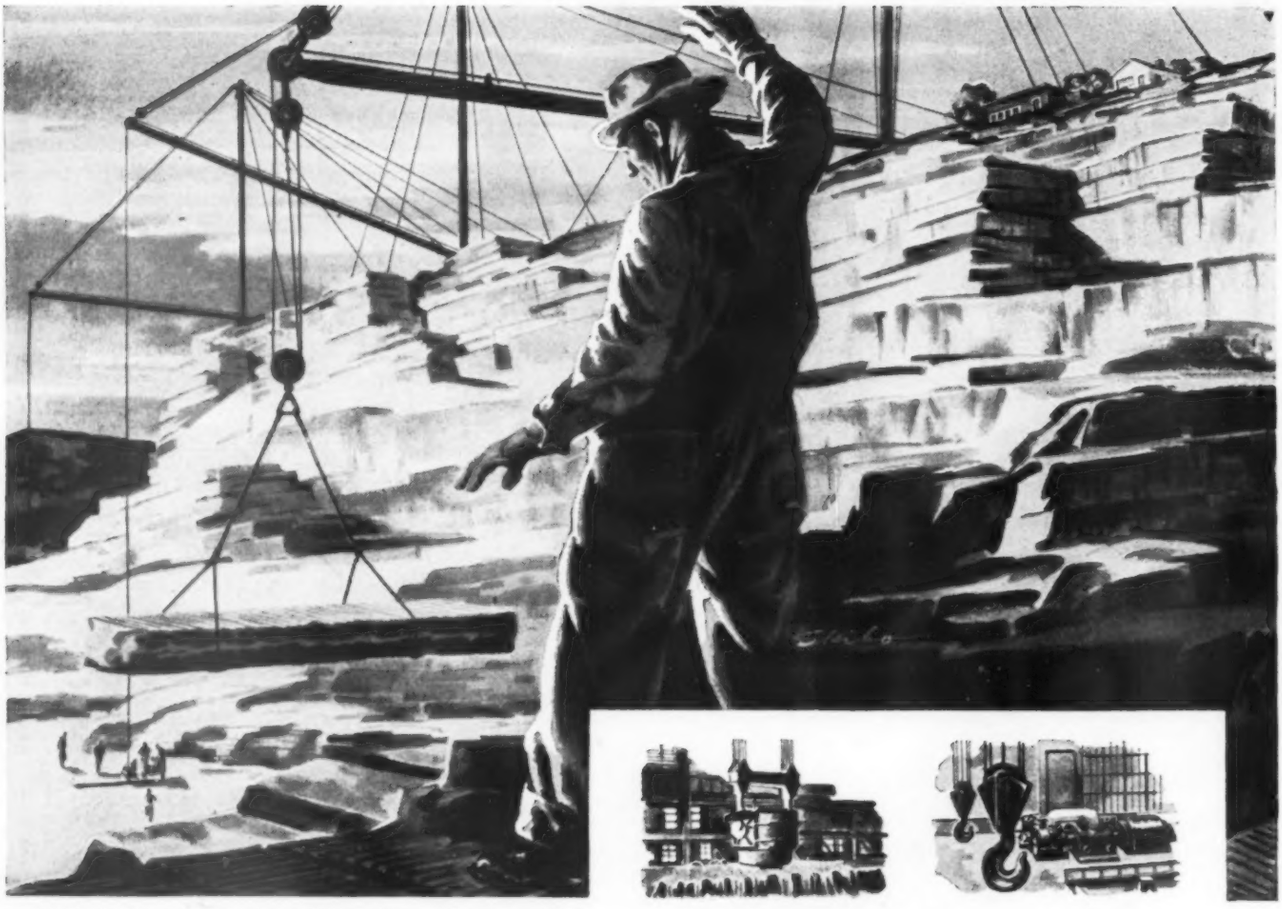
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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

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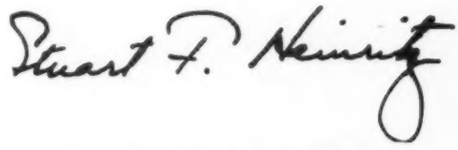
END INDUSTRY CONTROLS

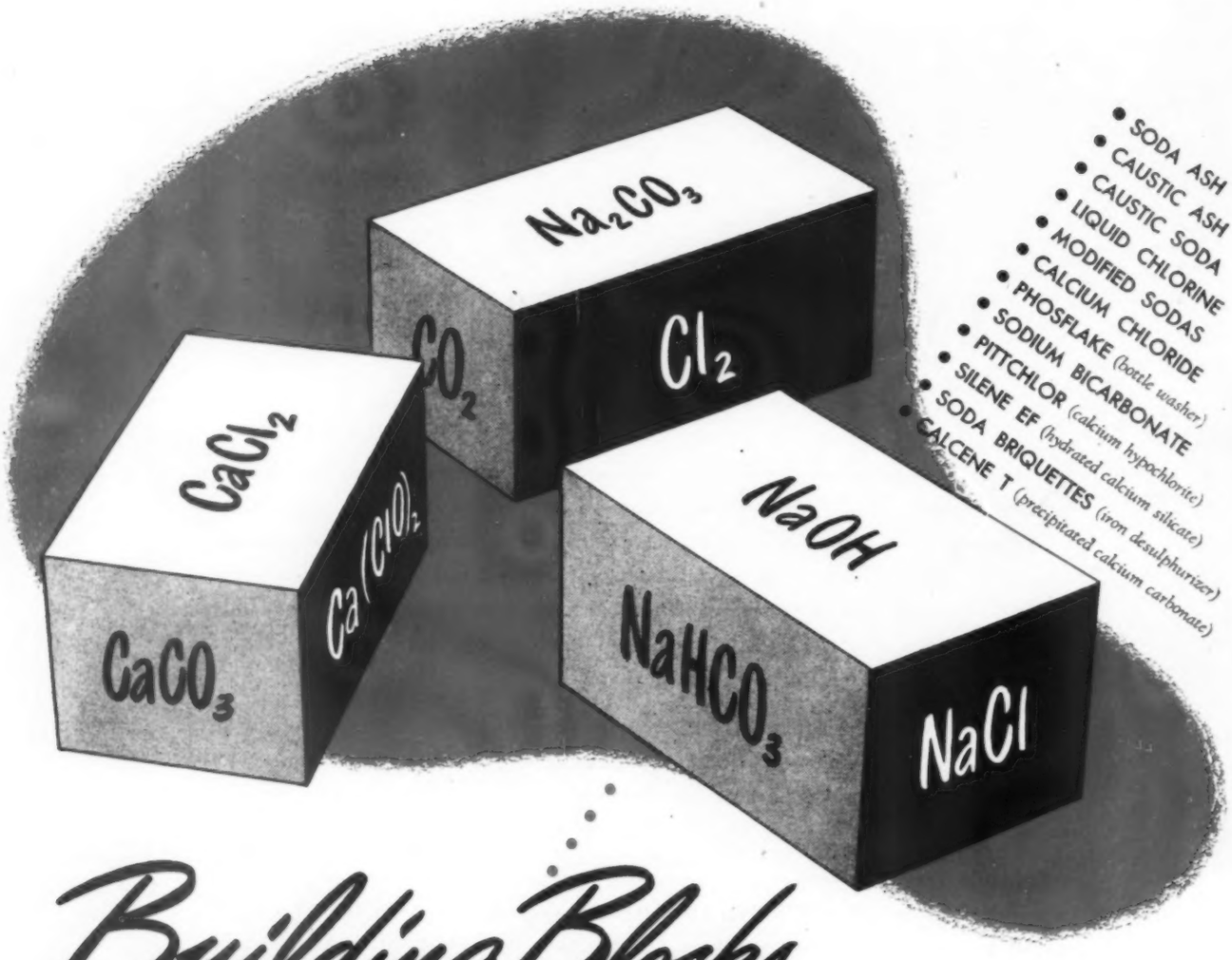
A CHINESE communist spokesman remarked the other day that his country needs about fifteen years of development by private enterprise to become ripe for the transition to communistic control. The irony of that suggestion would be more amusing were it not for the fact that our own administration follows a similar line of reasoning in its insistence that we need an indefinitely continuing period of "controlled economy" before whatever may be left of business is turned back to private enterprise.

One thing we have learned about economic controls is that they breed upon one another. They do not correct conditions or alter forces. When any part of the system breaks down, it can be bolstered only by other controls, serving only to build up a still more artificial state of affairs that can not endure.

Controls served a useful and necessary purpose as a temporary wartime expedient. They are neither an effective nor desirable pattern for peacetime operations or living. Over the past months they have built up a completely fictitious set of values for goods and services. They have not encouraged production or distribution. They have failed to create a new balance of purchasing power or to improve the standard of living. Their effects have been in the opposite direction. The half-hearted gestures of decontrol in some areas of our economy have merely set up a new state of unbalance and a crazy patchwork of chaos. They make it impossible for industry to plan intelligently or effectively.

A year ago we advocated the tapering off of controls on prices. That motion is now withdrawn. The time has come to end them completely.





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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



The president of one of our large railroads declares that there is **No Limit** to the service that a competent purchasing officer can render to the management of his company. His comment carries particular weight because he came up to his present position through the purchasing department of his organization, and he defines the service that management expects and demands of its purchasing men in specific and practical terms, outlining a program that embraces the larger aspects of the purchasing function as well as the everyday problems of procurement and procedure. Turn to Donald Fraser's article on page 103.

This testimony from a top executive is particularly heartening when read in the light of the thoughtful and vigorous appraisal of **The Future of Purchasing** on page 88. The editor argues that the future of the profession depends not only on the proficiency of purchasing men, but on the esteem in which they are held by others, and that the future is in our hands only to the extent to which we can cultivate a fuller understanding and appreciation of the significance of the buying function.



Bob Ragase, writing from a background that includes experience in both buying and personnel work, presents a comprehensive and highly stimulating list of questions to aid the purchasing executive in **Evaluating a Buyer.** The topics cover a half dozen different aspects of the basic qualifications that make for success in purchasing and measure the capacity for taking on added responsibilities. Turn to page 106. Maybe you'll want to try it on yourself.

As in every issue, we present this month practical case studies showing how the other fellow handles the buying job. You'll find some excellent ideas and suggestions in the simple and effective forms of the **Hoosier Cardinal Corporation** (page 98); in the organization and procedure developed at the **Harvey Machine Company** (page 118); and in the experience of centralized purchasing for the **State of West Virginia** (page 113). And the monthly Forms Forum (page 295) presents a variety of successful ways of handling the routine of procurement.

Purchasing experience qualifies a man to undertake a variety of unusual assignments in industry. Several of these are reported for you in this issue. There is the case of the purchasing agent who was selected by his company to **Run A Foundry,** in a unique solution of the "manufacture or buy" problem (page 93). Down in New Orleans we ran across another purchasing agent organizing and directing a new and effective phase of the government's **Surplus Disposal** program (page 110). And then there is the man whose job has earned him the title of **Expeditor Extraordinary** in getting a new product into production and onto the market (page 116).



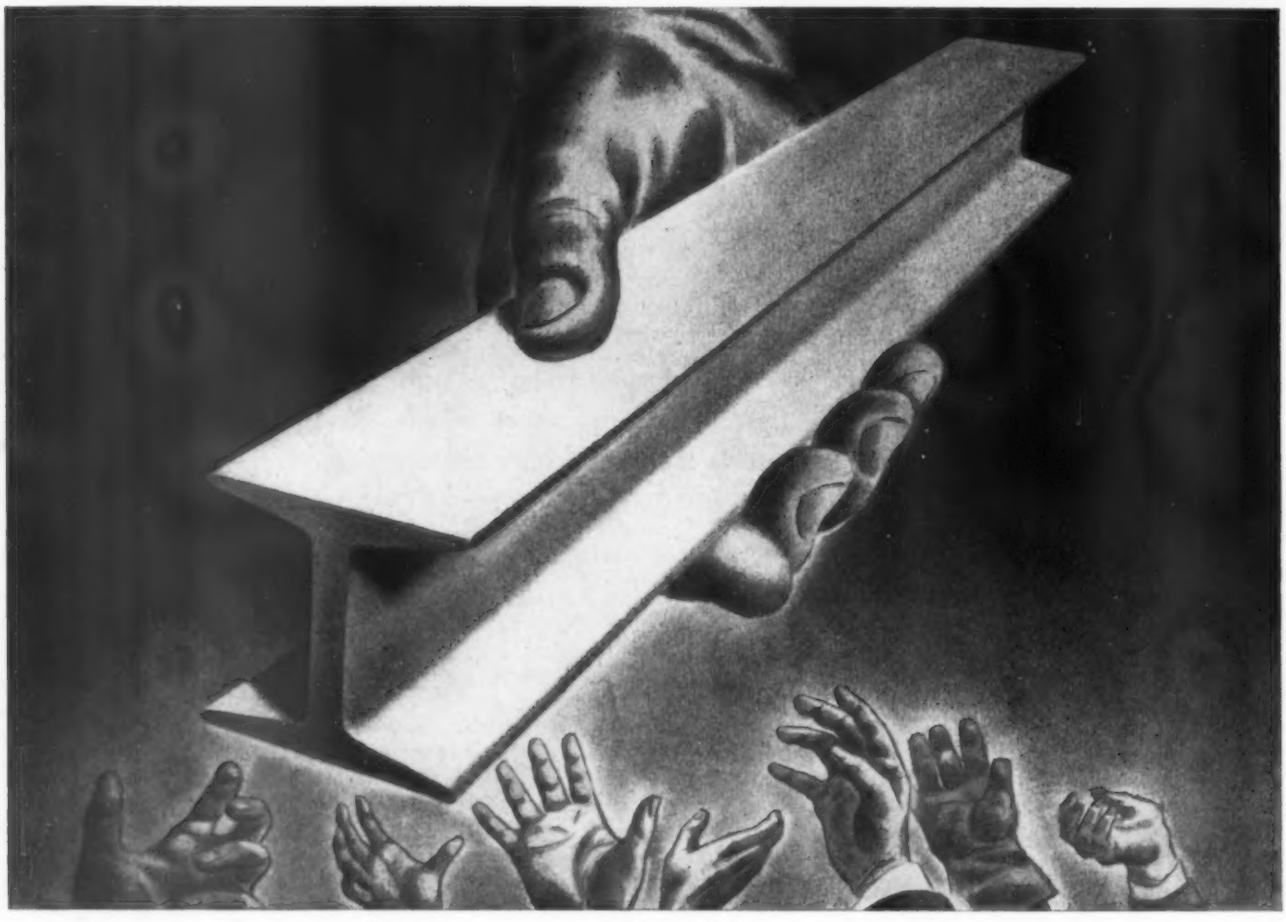
Buying A Stoker? Then you will want to read and study Donald Frederick's expert analysis of the various types of equipment available, their characteristics, advantages and limitations. The first consideration is the type of fuel to be used, then the capacity required and the nature of the load. Selection of the proper equipment follows, and you go on from there. The story, on page 100, has some interesting illustrations of a variety of modern installations.

This month's **Guest Editorial** (page 87) is by Charles M. Healey, Jr., Vice President of N.A.P.A. for District No. 9. He recounts the personal satisfaction that he has found in the job of maintaining a steady flow of materials to serve the needs of a busy city.

We think you'll like the new feature introduced this month — pages from a **Buyer's Notebook.** It consists of brief comment and observation on matters of interest to purchasing men, practical tips from everyday experience, and the little things that you want to clip for future reference. It appears on page 127.

In the broader view of business and economic developments that affect purchasing, we commend J. W. Knowlton's analysis of industrial history as the reflection of a basic **Social Revolution** (page 143). And there's an answer to loose talk and unfounded criticism of our **Big Business** system, by Grey Leslie, on page 124.

Don't overlook these monthly departmental features compiled especially for purchasing men—the **Washington Letter** on page 67, the listing of **New Trade Literature** that is yours for the asking, on page 14; and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer, on page 148



Brother, can you spare a beam?

Steel is like money. When you need it, you need it *badly*. That's why we have many steel plants to give next-door service most anywhere.

But lately it's getting so we hesitate to open the mail or answer the phone. We *know* there will be friends asking for steel—steel they need badly—and often we just are not able to fill the bill.

And here's what's causing it all

For a while it looked as though production would soon catch up with demand. Now that time seems more distant. The many things holding up top steel production have been slow to clear away. Unpredictable stoppages keep popping up, and shortages have brought other delays. You know about many of them. We've been doing our best, but for reasons beyond our control, we're still getting orders we can't fill.

But remember this:

One of these years the steel situation is going to change for the better. When that happens our plants will be among the first to stock products now hard to get and we'll burn up the roads rushing your steel to you. In preparation for that day, we're improving and expanding facilities, to protect the quality of Ryerson steel and ship it to you faster.

We are even now building a new plant and adding extensively to equipment at 11 others.

Meanwhile, the steel you need or a practical alternate may be in stock. So contact the nearest Ryerson plant with the full knowledge that we will do everything in our power to work with you.

JOSEPH T. RYERSON & SON, Inc., Steel-Service Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston

RYERSON STEEL

Satisfaction in Service

By CHARLES M. HEALEY, JR.

I LIKE my job. Yes, I really like my job. It is the job of a Purchasing Agent — City Purchasing Agent in a community of 175,000 of my fellow citizens. I work for all of them. They are all on my board of directors, and they asked for the department I head.

Do you happen to know where I can get a good elephant or a healthy Sicilian donkey for our zoo; horseshoes for our heavy draft horses; cast iron pipe for a desperately needed veterans housing project; laboratory, athletic, and tool supplies for our schools; radio equipment and uniforms for the police and fire departments; sheets and pillow-cases for our hospitals; soap for our laundries and public buildings; or any portion of 10,000 ovals of the lowly toilet paper?

Yes, I know something about shortages, rationing, priorities, the old PD-1A and AA-5, price controls, CC ratings, inventory limitations, escalator clauses; suppliers, good and bad; and politicians.

Headaches? I have plenty of them. But I still like my job. Each day—yes, and each night—brings a new problem which must be tackled and solved. Every change in the weather — a heavy rain or a heavy snow—means new tasks for the municipal Purchasing Agent. And with these problems a new opportunity is provided for the Purchasing Agent

(*Continued on page* 346)

Charles M. Healey, Jr., City Purchasing Agent at Springfield, Mass., is Vice President of the National Association of Purchasing Agents for District No. 9, representing the four New England Associations. He received his engineering training at Worcester Polytechnic Institute, and was graduated from the Massachusetts Military Academy as Engineer and Supply Officer, Engineer Corps, National Guard. He has been continuously in the public service of his native city since 1923. For sixteen years he was associated with the Engineering Department, where he had charge of developing and buying for the large stores account handled for that branch. In 1940, he was transferred to the newly created central Purchasing Department as Deputy Purchasing Agent, and the following year became head of the department. He is a past president of the Western Massachusetts Purchasing Agents Association and former national vice chairman of the Governmental Buyers Group of N.A.P.A.



Quite aside from his position in the municipal administration, he is an active worker in all community and civic affairs. Perhaps the fact that he is the father of three sons and a daughter may have something to do with his keen interest in the community welfare. But the philosophy of service which he expounds in this editorial is an exceedingly practical philosophy in his case. Currently he is serving as President of the Tapley Parent-Teachers Association, member of the Board of Directors of the Credit Union League of Massachusetts, Director of Purchases for the Springfield Chapter of the American Red Cross, member of the Board of Directors of the Springfield Safety Council, and member of the Speakers Bureau, Adult Education Council. He really works at good citizenship.

In practical terms, the future of our calling depends not only on how well we do the job, but on what management thinks of it

By STUART F. HEINRITZ

The Future of

THE invitation to discuss "The Future of Purchasing" is a temptation to paint a bright and inspirational picture of the purchasing potential—the broad possibilities for greater service and achievement in this procurement function of ours, and the growing stature of the purchasing executive among his colleagues in management. This is an important viewpoint, and one which we should never neglect in our individual and group deliberations.

Purchasing has been fortunate in having prophets among its leaders —men of practical and far-sighted vision, who have opened new vistas and widened our horizons, placing before us a constant challenge to raise our sights and aim at higher standards. And they have been men of accomplishment, too, demonstrating in their own careers that these standards and opportunities are not merely visionary, but are capable of attainment. Year by year we have seen these visions become realities. We have come a long way toward the achievement of our goals; in the prolonged period of material shortages which have characterized recent purchasing experience, we have tasted the satisfaction of accomplishment, recognition, and prestige for the purchasing function as a vital cog in the machinery of management and production. These developments make it easier and more practicable to realize our opportunities to a fuller extent, and that means accelerated progress.

Very properly, we do not rest upon our laurels at this point, but set our goals still higher. Only a few weeks ago, at a meeting of the Association of American Railroads in Chicago, Donald V. Fraser, President of the M-K-T Lines, declared: "There is no limit to the value of a purchasing officer to his management." Mr. Fraser spoke as a top executive in his field. He also spoke with the conviction and authority of one who knows at first hand the problems and opportunities of procurement, for he spent fourteen years in the purchasing department on his way up the ladder. We must share that conviction and exemplify it in our work if we are to continue in our progress. Let us never lose sight of the opportunities that lie ahead.

But in a more literal interpretation of this subject—the future of purchasing—we must concern ourselves not only with the potential or the goal, but more specifically with its attainment. How close can we reasonably expect to come to our objectives? How soon? And how can we most effectively implement our progress? These are the realistic aspects of the subject, the practical guide to policy and program to the channeling of individual and group effort. I believe that this is the viewpoint your committee had in mind when they put this topic on the conference agenda—navigating by landmarks instead of by stars.

The future of purchasing depends on two basic factors, which are quite distinct from one another, yet so closely interrelated and mutually dependent that no matter how far we may go with either one, the future is not particularly bright unless we keep step with the other.

The first of these is our competence and proficiency in the performance of our procurement job. There is no future for incompetence, or for incompetents, in any field, and purchasing is no exception. This means that we must have a full knowledge and appreciation of the responsibilities of the function, and of the opportunities of "plus values" for maximum contribution to the successful operation of the company. It means, first of all, the functional approach to the job; also the professional approach; and the executive approach, which is even broader and more significant in scope. It means that we must know the best methods of doing the job, and be constantly on the alert to improve those methods by better techniques and greater efficiency. It means competence in administration, to translate these qualifications of knowledge into actual performance. It means developing and maintaining access to facilities for current information and interpretation of the manifold influences—technical, economic, legal, and political—that affect materials and their procurement.

It is obvious that such competence and performance must be the foundation of all progress in purchasing. And it must be conceded that our foundations have been soundly and strongly laid. The brilliant achievements of wartime purchasing—and, no less, the reconversion of purchasing methods and programs to meet their requirements and solve the problems of a troubled postwar economy—bear eloquent testimony to this fact. Progress along this line is a steady process, like climbing up a ladder; as we ascend, each new rung is firm beneath us and we stand on a higher plane.

But this is only half the story. It means merely that we are prepared to merit and enjoy a brighter future. For there is a second factor that must be considered. The future of purchasing depends—in fact, this might almost be taken as a definition



of what the future holds for purchasing men—on what others, particularly in management, think of purchasing. Our own satisfaction in a job well done is a very pleasant thing, and perhaps competence is its own reward. But to paraphrase the classic maxim that "Beauty is in the eye of the beholder," just so the significance of purchasing and the future of purchasing are in the eyes of the President and the Board of Directors.

We may be ever so competent, useful, and deserving; we may gather among ourselves and pat each other on the back for our achievements, gazing with starry eyes at the potential of purchasing as we know it, but it profiteth us nothing unless we persuade management to see it the same way. In this competitive world, the man who proceeds on the theory of the "better mouse-trap" and expects the world to beat a path to his door, is simply unacquainted with the facts of business life.

I am fully aware that numerous examples can be cited, where progressive business organizations have sought out the best available men in purchasing and have accorded them positions of authority and prestige commensurate with their ability to make purchasing a vital factor in the operations and profits of the company. I would not for a moment discount those instances. But for every example of this sort, a dozen cases can be cited where, for no lack of competence or qualifications on the buyer's part, and in spite of outstanding performances within the scope of his position—not only has such recognition been lacking, but the very opportunity for rendering the maximum service and realizing the maximum benefit from good purchasing performance has been cancelled out by withholding such confidence, understanding, and authority. The situation emphasizes the fact that the fortunate few are regarded as exceptional individuals; the progress has been primarily an individual affair, and only secondarily an advance for the basic factor of purchasing.

We have unquestionably made progress along this line, but in the very future of things it is not the steady, ladder-like, step-by-step progress that characterizes our advances in professional competence and qualifications. Rather, it is like the progress of the frog in the well, who jumps up three feet and falls back two at every jump. It will be well for us to recognize this essential difference, and it will be heartening as we tense our muscles for another leap upward.

Throughout the war emergency, management leaned heavily upon its purchasing men and was lavish in its praise, but memory is short. Many of you were present at the national conventions when Donald Nelson described the work of the War Production Board as a procurement operation, paid tribute to the counsel and the services given by purchasing men, and declared that George Renard had done more to help him than any other one man. Well, three years have passed, and when Mr. Nelson takes pen in hand to record his official memoirs in the book "Arsenal of Democracy," the only reference we find to that accomplishment in a bulky volume studded with personal acknowledgments is a six-line passage stating that he *could* have set up an ace purchasing department, that the National Association through George Renard *would* have placed the best purchasing men in the country at his disposal, but that it would have taken six weeks and he didn't have six weeks to spare. Perhaps, as is so often the case, we men in purchasing are just a little ahead of the business cycle, but in an era of inflationary fears, there's a prize bit of deflation for you.

Mr. Nelson is a typical big executive; there are hundreds like him in all walks of industry and business who are going through the same mental process as the war emergency fades into perspective. How often do you hear, nowadays, that wartime procurement was simply an expediting process. The war is over now; once again, "anybody can buy." Of course that isn't a sound conclusion, but it's the way a substantial part of management is thinking today. And whether we like it or not, our future depends on what these executives think of purchasing. Their opinion, good or bad, appreciative or derogatory, is our future.

There are a number of things which tend to strengthen this state of mind. One is that, numerically speaking, purchasing personnel happens to be in a recessive stage. There's nothing in this to be alarmed about, for it is a perfectly natural development. It has been true since 1943, when the construction phase of war production activity passed its peak. One New York purchasing executive, who directed a staff of 70 people three years ago, now gets along very comfortably with 14. A "borrowed" purchasing agent for the war contracts division of another large company headed a department of more than

Address at the third annual conference of District No. 7, National Association of Purchasing Agents, Birmingham, Oct. 11, 1946.



200 people in 1942, and it was not overstaffed for the job that had to be done. It began to taper off sharply in 1943, and by the end of 1944 they had all packed up and gone, turning what was left of the job back to the regular purchasing department. These are extreme examples, but they are by no means unrepresentative. To be sure, the number of people engaged in purchasing almost trebled between 1939 and 1943, and we are substantially ahead of the prewar figure today. But when an executive looks at a business curve, he is most interested and most impressed by its direction, and the trend is definitely down.

Meanwhile, for the past year or more, sales staffs which were dormant throughout the war period have been in the process of expansion and revitalization. That trend is definitely upward. Put yourself in the President's place. What is his natural conclusion as to the relative importance of the two fields as he looks at these two trends and scans his personnel budget? Only a short time ago, he necessarily relied upon his purchasing agent to shape the quota of production according to the materials that could be procured. Today his ear is attuned to the advice of his sales executives and their plans for capturing a share of the postwar market for his product.

That in itself operates to the detriment of purchasing prestige. But it goes farther than this, for in all too many cases the intensified sales effort is directed into channels that reflect all too clearly the results of such thinking — by-passing the buyer in an attempt to reach some other person presumed to have more influence in a company's buying decisions. These tactics can be combatted, and in the long run they will not prevail, but their acceptance by any substantial number of sellers, even a minority, pushes the bright future of purchasing off to a more remote data.

We are apt to overlook the significance and the effect of this recessive trend by putting too much credence in our own statistics. There is cause for justifiable pride in the fact that Association membership is at an all-time peak, and is still growing, without any intensive drive to stimulate such growth. Here is a wartime advance that we have held, and held on sheer merit. But let's look at it objectively. The president of the Chicago Association, largest of the more than 70 local chapters making up the N.A.P.A., with 700 buyers on its roster, declared last May that a reasonable potential for that area was 1,000 members. In other words, in the very area where we seem to have attained the greatest buyer-consciousness, nearly one-third of company managements — yes, and nearly one-third of purchasing department heads themselves — have not yet been sold on the buying function sufficiently to identify themselves with the national organization devoted to this phase of business.

And how are we going to explain the fact that among the larger Associations, where the bulk of national membership is concentrated, 35% attendance at a monthly meeting is considered pretty good? What does management think, in the other 65% of the companies, when their own hitch-hiking representatives on the Association rolls don't think enough of their own calling and its importance to turn out once a month? If purchasing were really seriously pressing on the attainment of its future, you couldn't keep these men away from the meetings, and their managements would insist upon active attendance and participation. To be sure, we can point to shining examples of leadership and benefits, but there are just as many examples of indifference. Which of these is the impartial outside observer going to believe?

Representative Membership

Taking the broad field of purchasing as a whole, inside and outside of the Association, we are simply not working at this progress that we so hopefully desire. We are depending on a minority leadership to drag the rest of the field along, which is a slow and burdensome process. That's something for local officers — particularly program, membership and attendance chairmen—to take seriously to heart, for the responsibility eventually devolves upon them. It's also a matter of policy in departmental and Association administration. Purchasing is peculiar in that its organization tends to center in one man at the head of a department, far more than in some phases of industry, and Association membership reflects this characteristic. We have never made any consistent effort to mobilize—for the progress of purchasing — the total manpower and skill and influence that really exists in our field. Some purchasing executives bring their assistants to Association meetings, take out memberships for them, and encourage their active participation; but these are a small minority. For one reason or another, Association policy has repeatedly gone on record as opposed to membership for those in junior or subordinate purchasing positions.

In what other business or professional group will you find such a curious policy prevailing? Not among the engineering societies, where a man's individual qualifications and line of work determine his eligibility and desirability for membership, and where every man in the field is given the opportunity to enhance his knowledge and proficience and is made conscious and proud of his calling. Not in the management

societies and industry associations, where corporate memberships are the rule so that every man may benefit by what the organization has to offer. Not in the Society for Quality Control, youngest and fastest growing of the specialized functional groups, who will turn out three times as many men at a regular monthly meeting than the purchasing agents in the same city, and are impressing industrial management very forcibly and favorably with the importance of their function by their own earnestness in shaping their future.

Who knows, with similar inclusiveness and earnestness, with an interest in improving *all* purchasing proficience and performance, and without compromising the essential standards of membership in the slightest degree, you might even convince some of the bright young men in your department that there is a real future in purchasing for them, and might attract the type of men who would add prestige and accelerate the progress of the calling.

What Others Think

Don't mistake this as an argument in favor of numbers for their own sake. But don't harbor the illusion that the dignity and quality of the organization can be maintained only by restricting membership, officially or otherwise, to department heads. Why should they share their experience and their hard-earned wisdom with the younger men, the newer men, and the assistants in purchasing? For the simple reason that this is where the future of purchasing lies, which will affect all purchasing men. And don't forget that it's the man who is on his way up that it most keenly interested and most energetic in making the most of his job. Incidentally, he will probably be a better assistant for this opportunity.

And there is no virtue in the boast that progress to date has been achieved without promotional effort. The professional engineering societies, with which this group is sometimes compared, have no such taboos or dignity or ethics; they recruit accredited members at the undergraduate stage, before they have ever held a job or started to practise. Business success, in this competitive economy, is predicated on intelligent promotion. The salesman you like, the man you do business with and who benefits your company the most, is the man who has a good product and brings it intelligently and aggressively to your attention. In the function of purchasing, you have a good product. If you are sincere in the objective of advancing the profession, it should be a primary activity of this organization to reach every *bona fide* purchasing man in every company—to help him improve himself through the facilities of associated effort and to enlist his active aid in working for the common good. In doing that, you reach his management, and thus the two factors that make for a better future in purchasing are served.

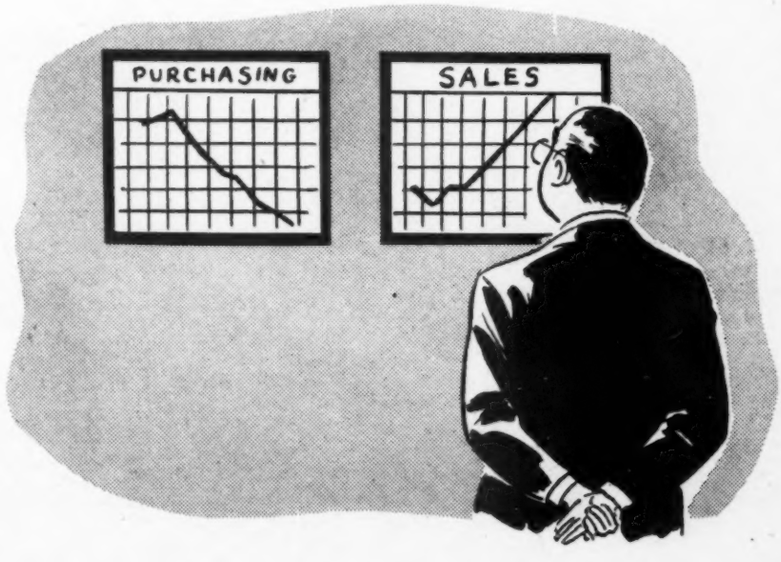
Any complete program aiming toward the more complete realization of the purchasing potential — and therefore the program of this Association as the representative organization of purchasing men — must concern itself with progress in these two areas: the quality of purchasing performance, and what others think of purchasing. In a college curriculum, the first would be described as a prerequisite course, without which no further progress is possible; the second is the applied science that gives standing and scope and practical significance to the subject.

The possibilities of this second stage have been largely neglected in purchasing. They have been glimpsed and hoped for; the machinery has been set up, but it has operated only imperfectly. Whenever the subject comes up in relation to a purchasing man's individual position, more often than not a sense of frustration is revealed. There is a tendency to place the burden for the situation on the individual, but that is not the whole story, and that approach will never find the answer. The true concept of the future of purchasing is not the collective appraisal of 10,000 or 20,000 individual cases. The whole must be greater than the sum of its parts. Effective progress is group progress in which the individual must either keep pace or fall by the wayside.

The machinery we have for this purpose consists of the Educational Committee and the Public Relations Committee, on both the national and local levels. On several vital points, their objectives are one and the same. It is certain that both will be more effective if their work is coordinated, at least to the extent of defining these objectives.

The educational program of the Association has been one of its outstanding accomplishments. But the report of the Educational Committee in May, underscored from the national office, revealed that far from reaching all the membership, this program is actively put to work in a relatively small percentage of the local chapters. It ought to be operating wherever there is an organized group of purchasing men. Steps have been taken to correct that situation, to overcome inertia and to put the magnificent facilities developed by this Committee to work on a broader scale.

The program of public relations is a more recent project. The subject has never been thoroughly understood by the Association at large; it is still pretty much in the hands of the devoted few. This committee has worked hard and has laid a good foundation. It is relatively new, without the background of experi-



ence and proved accomplishment that would gain acceptance and enthusiasm for the program. It deals with intangibles; there's no printed handbook or course outline to give it substance and reality in the members' minds. It has encountered not merely inertia, but active opposition in some quarters, both high and low. Perhaps the title is unfortunate. But the basic idea is a sound one; and it is the embodiment of this second stage without which the future of purchasing is a dim and distant vista.

Because of these differences of definition and understanding, and to avoid the confusion that might arise from preconceived notions regarding these two programs, I want to steer clear of the established nomenclature to present a strictly functional picture of the job to be done. It should not then be difficult to make the application, through one or the other of these two established mechanisms, or through some entirely new means, and it doesn't make any difference what the channels are so long as they lead toward the desired objective.

Some years ago, the Public Utility Buyers Group of N.A.P.A. met in Birmingham for its midwinter conference. On the program of that meeting was a professor from one of the great southern universities, who spoke on "The Psychology of Purchasing". Psychology is the science of the mind and of behavior. The speaker went on to make the point that applied psychology is the science of influencing others to a desired state of mind or opinion, resulting in desired behavior. It is a practical science that every purchasing agent employs in the daily conduct of his office, in his relations with vendors as he negotiates a purchase, and in his relations with other departments of his own company for whom he buys.

It seems obvious that if we are to make steady progress in purchasing as a part of managerial science, toward its whole-hearted and unquestioned acceptance as one of the basic executive functions in industry, and toward the realization of the full potential of service, saving, profit and good will that are inherent in the procurement job — and if we are to reap the recognition and rewards that are also a part of this potential — there is need for the similar practice of applied psychology. Competence alone is not enough. We must influence the state of mind of those who are responsible for company policies of organization, administration, and sales, and those who teach and train the young men coming into a business career. We must influence them to the end that their opinion, their behavior and policies will be such as to permit purchasing men to do the job of which they are capable. Only to the extent that we accomplish this is the future of purchasing in our own hands, for it is management's conviction and attitude on the subject that will determine that future.

This doesn't mean propaganda and self-aggrandizement; it doesn't mean claiming the whole world of business as our particular oyster, it doesn't mean argument or publicity. It means a consistent plan for the factual reporting of what purchasing has done and is doing, for cultivating a better understanding of what good purchasing is, and sharing the vision of what it can be. You can call it education, or public relations, or applied psychology. What it really amounts to is salesmanship. We start with purchasing —a good product—and make that product just as fine as we can through our own performance. Then from that point on, we must sell the product to management, not only individually but as a group, through our collective efforts and organization. For essentially the function of purchasing is a property that is vested in the Association that stands as the representative of purchasing men and their job. Such salesmanship should be right at the top of the list of objectives and agenda of Association activities.

Like so many sermons, this presentation is addressed to a group which probably needs it least of all. I can think of no finer instrumentality for progress than this conference, with its serious purpose, its enthusiasm, its excellent publicity, its management attendance and participation. Here in the rapidly growing industrial South, relatively untrammeled by business tradition, there is an exceptional opportunity for purchasing to grow along with industry. You are aware of that opportunity, and are working at it.

But when the gavel falls for the adjournment of this meeting, let us not think of it in terms of history, but rather as a start toward something both bigger and better. Go back to your companies, and to the purchasing men who are not yet affiliated with your locals, and to the executive councils of the national organization, with the determination to carry on.

The future of purchasing beckons brightly on the far horizon, beyond anything we have yet attained. Our practical problem is how far, and how soon, we can approach along that road.





By E. L. CADY

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An interview with
F. M. Selinger
Purchasing Agent
Intertype Corporation
Brooklyn, N. Y.



USING PURCHASE KNOW-HOW to run a COMPANY-BOUGHT FOUNDRY

IT is unusual for a Purchasing Agent to be selected by his company as the man to operate a foundry. Such tasks usually go to executive engineers. And when anything unusual happens in industrial management, there is always a story behind the story.

F. M. Selinger has shown that a Purchasing Agent, by using his years of practical experience and plant observation — his first hand knowledge about factories and how they ought to be run to give maximum satisfaction and service—can (1) take over a small foundry acquired by his company, (2) increase its output by more than 40% with few changes in manpower and equipment, (3) then improve the quality of the output, and (4) go on to lay plans for modernized equipment and methods.

The story behind the story in this case is in the general purchasing policies of this company, as administered by Mr. Selinger for a good many years. Intertype Purchasing Agents spend several hours each week out in the plant, watching the manufacturing processes, talking with workmen and foremen and superintendents—finding out at first hand what is needed in the products they are to buy. They also make visits to suppliers' plants, to get and to give first hand ideas of their requirements in dealing with the men who make the goods. "From first hand to first hand" would sum up this purchasing policy.

Taking Over a Supplier

When Intertype decided to buy out the Fairview Foundry, Inc., of Poughkeepsie, N. Y., which had supplied the company with castings for twenty-five years, the Intertype Purchasing Agent was the one man who knew most about what his company needed in the way of castings and what this company was best able to do. He had been to the foundry at least twice a year, knew all of its methods and problems, had fought out points with its representatives there and in his own office. Therefore he was the logical man to take hold of the foundry and fit its products more completely into his company's production line.

The task was not too simple Intertype makes typesetting machinery and needs thin-walled and intricate castings of good strength and machinability and fine surface finishes. Few foundries can make such castings. The company had actually spent considerable sums of money from time to time on duplicate pattern equipment for foundries which had successfully bid upon parts of its business, then had to recall this equipment when the

foundries were unable to make the castings satisfactorily.

The Fairview Foundry could make the castings but, due to labor shortage and to general postwar conditions, could not make enough of them. Mr. Selinger went up to Poughkeepsie to do a little first hand expediting, then eventually encouraged his company to buy the foundry.

Selinger's first step upon taking over was to do something about the skilled labor situation. Intricate castings, as every foundryman knows, are peculiarly dependent upon the skill and experience of the men who mold and pour them. There were a few men at this foundry who had mastered the kinks and the crafts of making the Intertype castings, but there were not enough of them.

Skilled labor was not to be had. Unskilled men were hard enough to get. The immediate answer to the labor question was to conserve the time and improve the working conditions of the men who had the necessary "know-how".

Stepping Up Efficiency

One time-saver was to rip out the old fashioned racks on which the patterns had been piled in the helter-skelter fashion all too common among small foundries. The racks were replaced with pipe racks from which the patterns are suspended. Each pattern now is plainly marked, in plain sight, and kept with the group of other patterns with which it is most commonly used. To find a pattern, a man simply walks down one or more aisles of patterns until he comes to the one he wants, and in most cases he knows exactly where that one will be. And when he finds it, he merely takes it down from the rack; there's no need to handle and repile a half dozen other patterns to get at the one he wants.

There were improvements to modernize working conditions. Rest rooms, for example, were renovated. Group insurance and hospitalization benefits were provided.

Other time and labor saving methods are being adopted as rapidly as possible. The railroad siding and other hauling and loading facilities are being changed to simplify the materials handling problems. The coal furnace which provided winter heat is being converted to oil so as to eliminate the part time diversion of manpower needed for firing it. New molding machines are being installed. New sand conditioners and high speed core ovens are on the way.

Even these simple steps were enough, with the addition of a first class operating superintendent, to raise the output in tons per month by more than 30%. But even more important than the tonnage record were some improvements in quality.

Mr. Selinger quickly adopted the old foundryman's rule: "Spend on the patterns and save on the machining." An expenditure of $3,500 on a new and better set of patterns raised the foundry production on one item to four castings per man per day, as compared with the previous production of one casting per man per day. Here was a gain easy to count. Not so easy to assay in value was the fact that the resulting castings required less snagging time and labor at the foundry and less cleaning and painting time at the machine shop.

The company has not yet been operating this foundry for a full year, and therefore cannot yet estimate the savings from such casting quality improvements completely and accurately. But standing out clearly is the fact that the Purchasing Agent knew what problems his plant had been having with the castings and exactly what foundry improvements to make to reduce these problems promptly.

One of the interesting developments in this operation, for which Mr. Selinger was also prepared by reason of his purchasing viewpoint, has been the necessity of tightening up on specification and procurement practices in respect to castings. He could maintain the close balancing of costs at the foundry against costs in the machine shops

Good pattern equipment is essential for economical foundry operation



Part of a mold for one of the thin walled castings used by Intertype



only if the main plant engineers kept him as positively informed of their requirements as they would have if he were in Brooklyn every day instead of spending most of his time in Poughkeepsie. Errors could not be allowed to creep into blue prints on the basis that "We own the foundry now; it is not as if we had to specify to an outsider." As is so often the case in intra-company purchasing, extra tightness was the only effective safeguard against dangerous and costly looseness.

Serving Outside Customers

The Fairview Foundry continues to serve some customers other than Intertype. Some of these were found to have castings requirements differing from the ones on which the foundry would specialize in its role as a production department; these were asked to discontinue their patronage, which could no longer be efficiently handled. Others which fitted into the new scheme were kept. Still others, whose castings problems were much like those of Intertype, were invited to come in.

Dealings with outside customers showed the reality of the old foundryman's complaint that too many buyers do not know all they could and should know about how to buy castings. The most common trouble is spending too little care and money on pattern equipment. Most of the patterns submitted were poorly made and of wood, not on match plates or boards or otherwise suitable for roll-over machines and other modern foundry equipment.

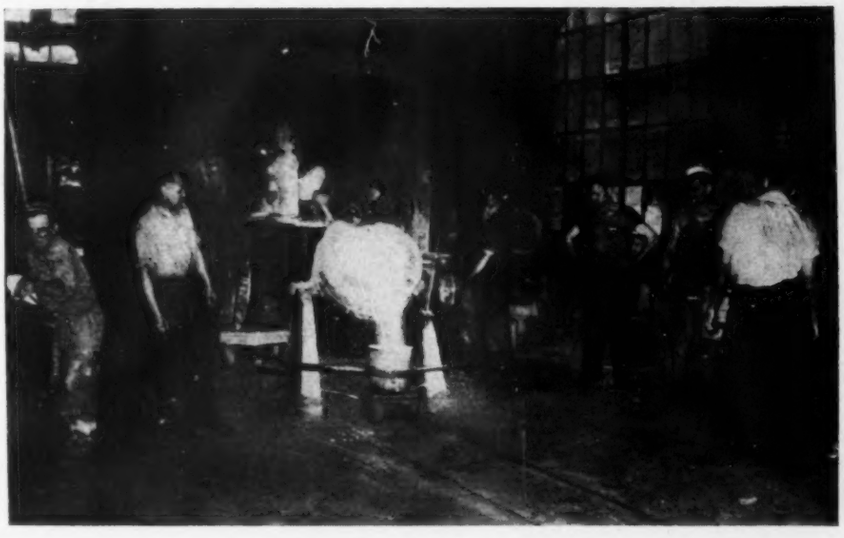
Mr. Selinger arranged for the foundry to join both of the major foundrymen's associations. The "Request for Casting Quotation" sheet, as found in American Foundrymen's Association booklet No. 43-45, "Recommendations to Buyers of Castings", was adopted as a standard sales tool. Requests for quotations now must include this form, filled out in detail. This is a great time saver in determining whether or not the Fairview Foundry can quote on the desired castings to the advantage of both buyer and seller.

Looking Ahead

While all of these steps were being taken, a force of apprentice foundrymen was being recruited. The new men are helping to increase the output. They are learning how to operate the new equipment as it is being installed, will never



Filling a bull ladle at the furnace



Filling a hand ladle with molten metal



Pouring the casting

REQUEST FOR CASTING QUOTATION

Material Specification: .....Per Blue Print.....attached (Part No.)

Wt. ea. (Estimated) .....lb. Actual Please quote price per each in quantities of....., ..., ...,

F.O.B. .....for Delivery by.....

Pattern, Type:

Pattern is designed for castings to be made of (Material) .....and patternmaker's shrink of.....inch per foot was used in its construction.

.....Loose, not gated, not suitable suitable for mounting on plate.

.....Loose, gated, with.....units per gate; approximate overall size.....

.....Wood, on board, with.....units per board, for flask size.....

.....Match Plate, with.....units per plate, for flask size.....

.....Cope & Drag, with.....units on board, for flask size.....

The patterns mounted on plates or boards cannot can be readily removed or remounted.

Pattern, Material: Pine, Mahogany, Aluminum.....Old (New) has run approx.....molds (Other)

Core	Cores Per Castg.	Material of Boxes	Number of Boxes	Cores Per Box	Designed for Blower	Material of Dryers	Number of Dryers
A	.....	.....	.....	.....	.....	.....	.....
B	.....	.....	.....	.....	.....	.....	.....
C	.....	.....	.....	.....	.....	.....	.....
D	.....	.....	.....	.....	.....	.....	.....
E	.....	.....	.....	.....	.....	.....	.....

.....Total Cores per Casting

No pattern is available

Please quote on supplying temporary production equipment for approximately.....pieces.

Flasks: Quantity available..... Type..... Make.....

Size..... Construction.....

Approximate annual requirement.....pieces. Approximate quantity per order.....pieces

These quantities are estimates for general guidance only. They may be changed without notice.

Radiographic Magnaflux inspection by foundry is not required for random castings (is sample only / all castings)

Previous Difficulties: *Nature*	*Location*
.....	.....
.....	.....
.....	.....
.....	.....

Remarks.....

In quoting on a casting job, complete information is required, on the form recommended by the American Foundrymen's Association.

need to learn—and unlearn—some of the older methods that are being displaced.

Early in the course of these developments, F. M. Selinger became Vice President of Fairview Foundry, Inc. But he continues in his position as Purchasing Agent of Intertype Corporation. Step by step he is turning the Fairview plant into a specialized foundry able to meet the Intertype requirements completely and efficiently. At the same time he is making the foundry a valuable source of supply to any castings user who needs much the same type of castings. He is the ideal man to run such a job, because he is intimately acquainted with foundry procedure and job requirements, and further, company policies and his experience as a buyer have kept him fully familiar with his own shop practice and with the ways in which suppliers' operations can be coordinated with the needs of his company.

THE BUYER'S ÆSOP

By IRMA FUEHR



THE FABLE OF THE THREE BUYERS

GUS Goldilocks, director of purchases at Whooperup Mfg., was a conscientious buyer. As assistants he had three conscientious purchasing agents, a Big-, a Middle-, and a Little-Sized buyer. However, Gus worried all the time for fear they were not as c-nsc--nt---s as he. Whenever he handed over a problem to Big-Sized, or to Little-Sized, for that matter, he was always sure that the problem was not being handled at all. When he gave Middle-Sized some correspondence to take care of, he immediately snatched back the correspondence and dictated the answers himself, because he was certain that Middle-Sized would botch the job.

Once Gus put out a suggestion box—he had heard somewhere that that was a good idea—and when someone actually had the nerve to drop in a suggestion, Gus vetoed the suggestion before you could say Gus Goldilocks. For he knew that, put into practice, it would send the office to the bow-wows before nightfall.

One day everything went so well that Gus worried his head off because he could find nothing to worry about. That evening after everyone had gone home, Gus taking that as a sign that nobody was attending to business, he rummaged through the desk of Big-Sized. Finding nothing amiss there, he rummaged through the desk of Middle-Sized. Disappointed because he found everything okay there, even discovering a sheet steel order in which Middle-Sized had accomplished a masterly escalator clause, Gus went on to the desk of Little-Sized. Little-Sized bought maintenance supplies. He appeared to have a satisfactory inventory on hand, and evidence pointed to the fact that he was getting 60-day delivery instead of the customary six-months-to-a-year. "There's something fishy about this," said Gus, and went home worrying happily all the way.

The next morning there was consternation in the office of B, M, and L. "Somebody's been rummaging through my desk," growled B. "Somebody's been rummaging through *my* desk," rasped M. "Somebody's been rummaging through my desk," piped L. "And don't think I don't know who it was!" They all knew, of course. But they didn't see anything to do about it, since Goldilocks was boss, and B, M, and L needed their jobs, as who doesn't?

The upshot of the matter was that B, M, and L realized they weren't being trusted for shucks, and took to carrying all their problems to Gus. That wasted much time and intelligence, but it served to keep Gus worrying. Which was what he wanted.

For several years Gus controlled everything. Then his doctor informed him that if he didn't keep out of his assistants' desks and take a vacation, a complete rest, far away from the reach of telephone and telegram, the sawbones could guarantee nothing but an early demise.

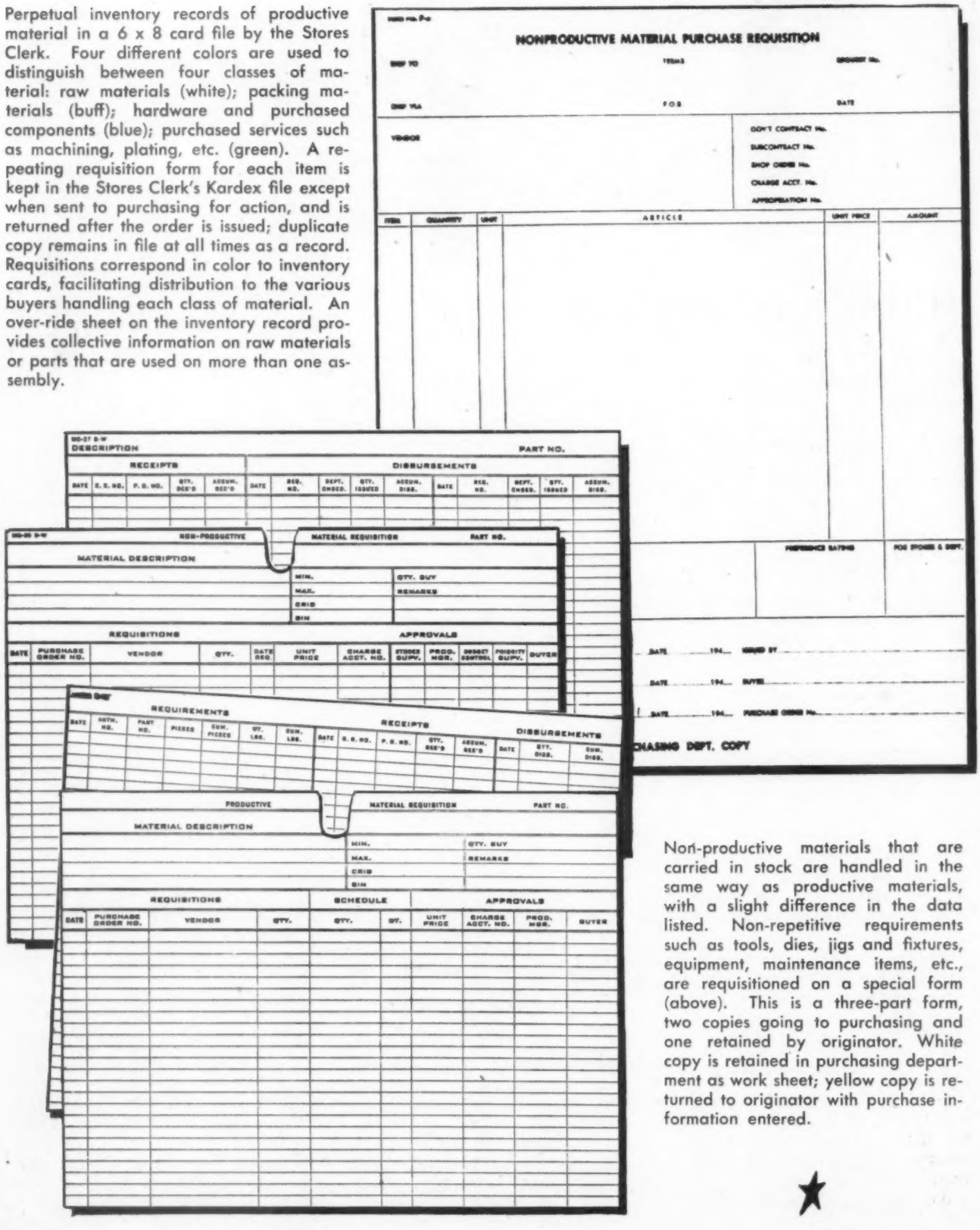
As you probably surmised, the minute Gus's train pulled out, emergency problems raised their ugly heads. Production needed plywood, and the assistant buyers, their ingenuity dead from disuse, didn't know how to go about finding any plywood. Specifications on a machine were changed, and nobody knew how to proceed under such outlandish circumstances. Bushels of letters lay unanswered; everyone was afraid to touch them, since they had long been Gus's exclusive province. Purchase orders piled up because Gus wasn't there to sign them and no one dared risk the awful hazards of putting his name on them. The orders bulged from the files and drawers, and lay in windrows on the desks, and hung from the ceiling suspended in baskets. Had it been possible, things would have gone from bad to worse. But everything was already worst.

When Gus returned to his office, all hale and hearty after his vacation—Mrs. Gus having stood over him with a loaded gun to keep him from worrying—he fainted at the terrible sight. This time the doctor ordered a year's vacation, by the end of which time the office was back on its feet again and everyone had forgotten all about Gus. However, Whooperup gave him a gold watch before telling him that they couldn't use him.

Moral: The whole cheese ought not keep satellite cheeses too satellite.

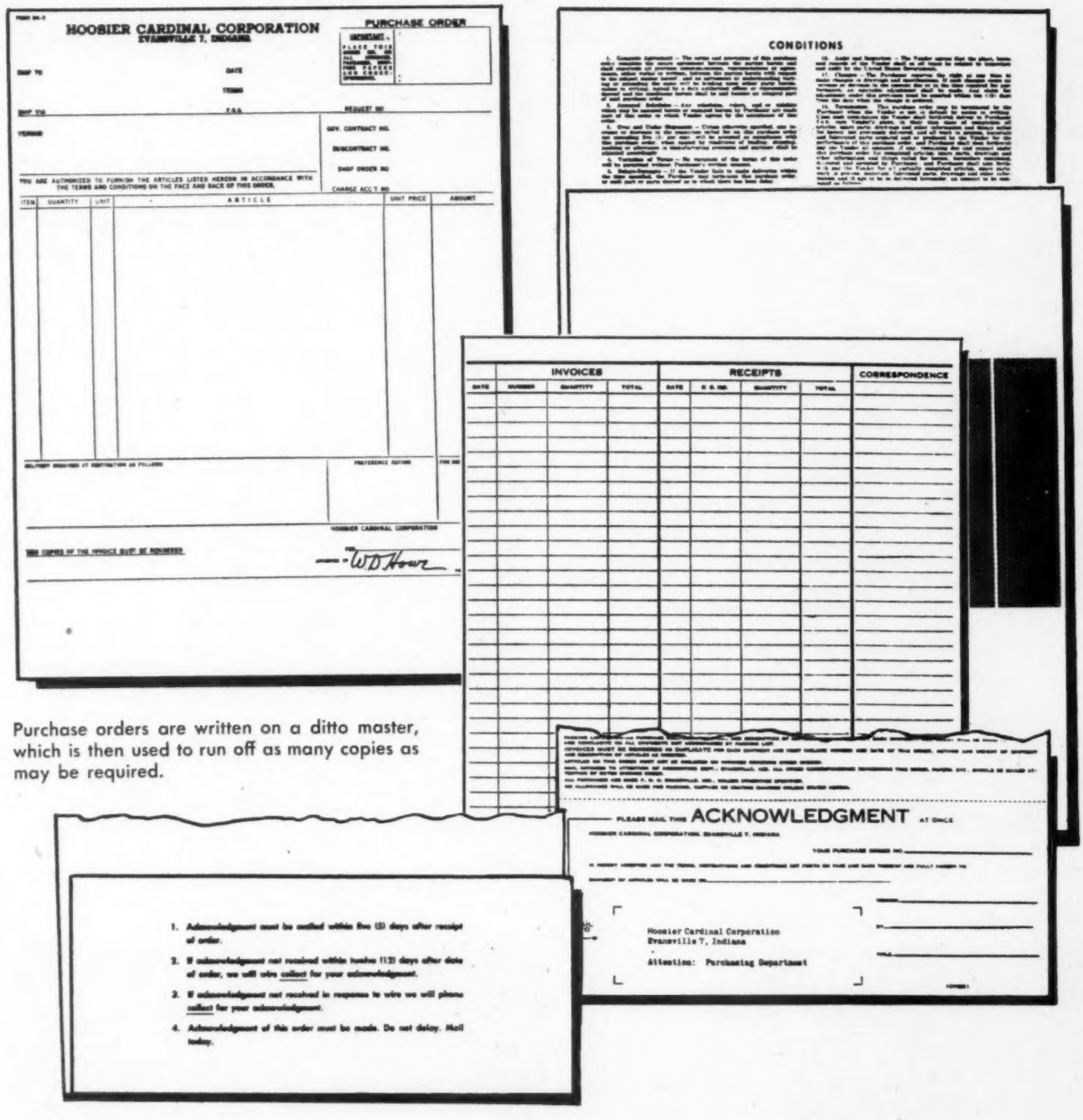
HOOSIER CARDINAL CORPORATION

Perpetual inventory records of productive material in a 6 x 8 card file by the Stores Clerk. Four different colors are used to distinguish between four classes of material: raw materials (white); packing materials (buff); hardware and purchased components (blue); purchased services such as machining, plating, etc. (green). A repeating requisition form for each item is kept in the Stores Clerk's Kardex file except when sent to purchasing for action, and is returned after the order is issued; duplicate copy remains in file at all times as a record. Requisitions correspond in color to inventory cards, facilitating distribution to the various buyers handling each class of material. An over-ride sheet on the inventory record provides collective information on raw materials or parts that are used on more than one assembly.



Non-productive materials that are carried in stock are handled in the same way as productive materials, with a slight difference in the data listed. Non-repetitive requirements such as tools, dies, jigs and fixtures, equipment, maintenance items, etc., are requisitioned on a special form (above). This is a three-part form, two copies going to purchasing and one retained by originator. White copy is retained in purchasing department as work sheet; yellow copy is returned to originator with purchase information entered.

PURCHASE ORDER SYSTEM



Purchase orders are written on a ditto master, which is then used to run off as many copies as may be required.

Vendor's copy of the purchase order is preprinted with standard terms and conditions on the back. A fold-over perforated tab at the bottom of this sheet calls vendor's attention to the necessity for prompt acknowledgement of the order. The acknowledgement form itself is on the other side of this tab (face of order) to be detached and returned to the buyer.

A white copy of the order is kept in the purchasing department's alphabetical file, by vendors, and a goldenrod copy ruled on the back to enter receipts, invoices and correspondence references, is retained by the buyer for purposes of follow-up until the materials are received and placed in stores. The accounting department copy (yellow) is similarly ruled.

A blue copy of the purchase order is sent to the receiving department to advise of shipments expected. Price information is blocked out on this copy. Change orders are prepared in the same way, with the same number of copies, corresponding in color with the original purchase order copies, and following the same distribution as the orders they replace.

Equipment must be adapted to type of fuel available, type of boiler, capacity required and type of load Spreader and underfeed compared

BUYING STOKER

• By DONALD FREDERICK

IT is not necessary to make compromises in buying stoker equipment. There is a stoker for practically every need. But it is absolutely essential that all the related facts be properly gathered in advance before orders are placed; most of the facts have to do with fuel.

The prospective buyer of stokers must be guided in all cases by the fuel supply that is available to him. He is not necessarily interested in the lowest price per ton, but he is vitally interested in the coal that will give him steam at the lowest unit cost — ordinarily per thousand pounds of steam.

Prior to the war, stoker design had been advanced to the point where almost any kind of commercial coal could be burned with reasonable economy; developments during the war have further refined stoker equipment so that at the present time any normal requirement can be met.

Fuel Is the First Factor

One of the important factors that must be fully understood is the overall coal situation — nationally speaking. High grade, or "premium" fuels are being rapidly depleted, which will tend to increase their price to the point where they can no longer be considered for steam purposes. New equipment is being designed for the lower grades of coal of which supplies are ample for several thousand years.

The two general classes of stokers are overfeed and underfeed. Overfeed stokers feed coal, by various means, to the top of the firebed. Underfeed stokers operate by pushing the fuel up through the firebed either by the action of screws or rams acting as pushers on the coal. There are many varieties of the overfeed type, while the underfeed stokers are generally of the ram or screw type. How the stoker operates is not as important to know as the kind of coal it will have to handle.

Stoker manufacturers ought not be consulted until after the coal has been selected. This suggestion is made simply to save time, since it will be clear that once the coal is selected the choice of equipment may be limited to a few types and only the best of the types indicated should be purchased.

Because of the trend in fuel supplies one of the first points to understand is that the fusion temperatures of ash in steam coals is on a downward trend so that it is well to purchase coal burning equipment, in the first instance, that will handle a reasonable variety of low-fusion ash coals. If the coal selected is of the non-coking, or free burning, type a "spreader" stoker may be entirely satisfactory. If the coal is not too low in fusion temperature, and is of the coking variety, an underfeed type stoker may be the best type to buy.

Spreader-Type Stokers

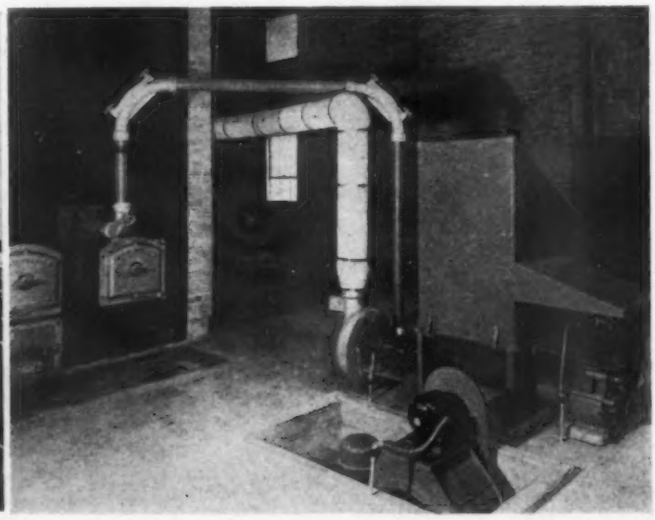
In recent years spreader stokers have become extremely popular because of their flexibility with regard to fuels and the very good performance that may be obtained with the usual coals. They are quite well suited where load demands vary over wide ranges. The spreader stoker gives good performance with low maintenance costs.

Coal is fed to the fuel bed, in the case of a spreader stoker, either by a mechanical device or by air. The mechanical type seems to be the most popular at this time because of the varying size furnaces or fireboxes it will handle. For smaller in-

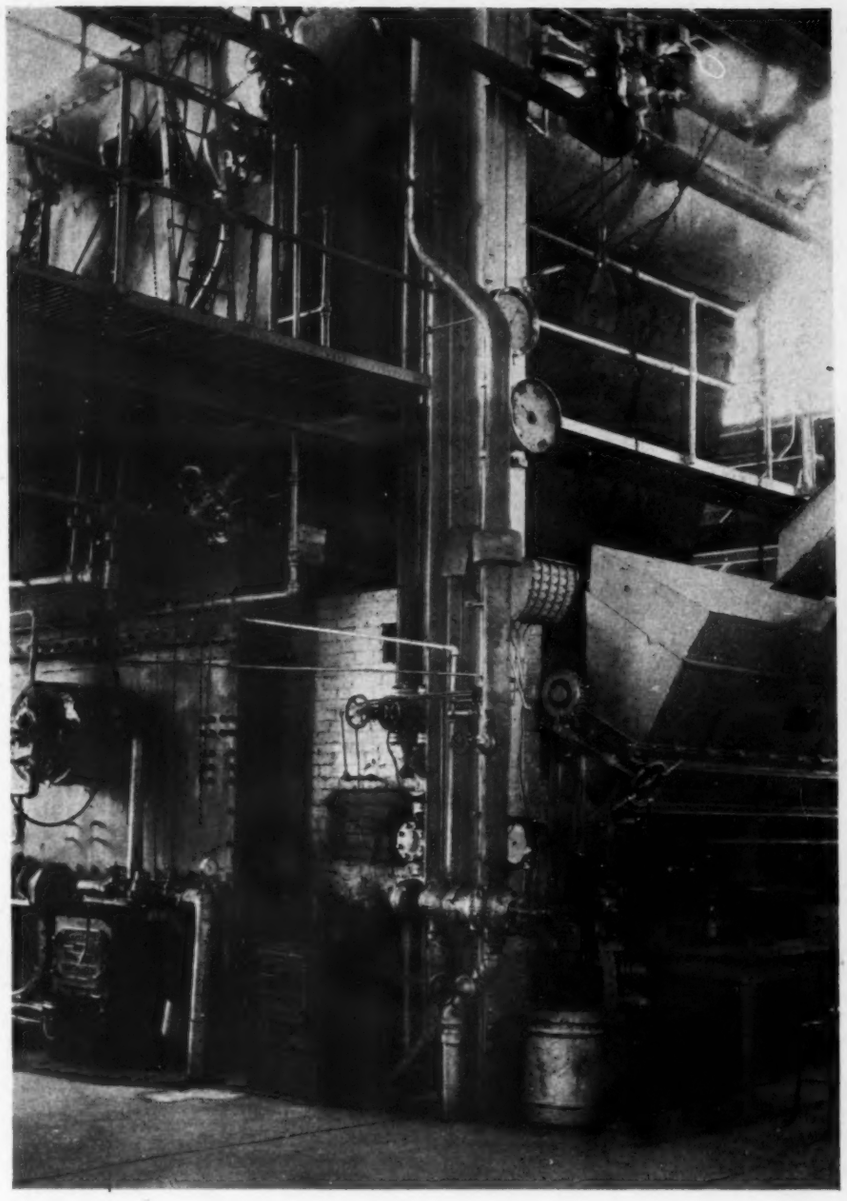
Battery of boilers served by underfeed stoker



Spreader installation with room for expansion



EQUIPMENT



stallations the pneumatic type is used with good results; the pneumatic spreader stokers carry the coal on to the fuel bed by means of a stream of air.

The spreader stoker is sensitive to coal sizes and there is a definite size of coal that should not be exceeded if spreader stokers are to be used. This is important since coal sizing costs money and the cost of this sizing may rule out the use of stokers of the spreader type. Sizes over 2½" lump do not work well with spreaders since the stokers of this type operate at high burning rates with a thin fuel bed; the sizes up to 1½" generally give the best results.

If free-burning coal of the proper sizing is selected and spreaders are purchased some attention must be given to the grates to be installed. If the ash content is high either shaking grates or dumping grates must be considered. The spreader will not work well if high ash coal is used and the depth of ash builds up quickly to shut off the air flow necessary for rapid combustion. But a minimum amount of ash is needed (from 4 to 6 per cent) to protect the grates from burning, and this is a must if chain or moving grates are to be used with the spreader.

The spreader type stoker appears to be supplanting some of the overfeed types commonly used and for this reason more space is given to its discussion here.

Advantages and Limitations

There are very few limitations on the spreader types other than fuel size. Spreaders are installed all over the United States burning coals ranging from low volatile high Btu to lignite of low heat content and as much as 40% moisture. Both coking and non-coking coals are used.

Certain furnace requirements must be met, however, with spreader type stokers. Heat releases up to 40,000 Btu per cubic feet of furnace volume are being obtained but furnace temperatures are high and adequate furnace cooling is the practice. One of the disadvantages of the spreader stoker is the high fly-ash emission with friable coals. This emission may be prohibitive in areas where it is restricted by ordinance. If fly-ash must be kept at a minimum, it would be necessary to install separators with some types of boilers and if the coal used were of the type that produces high fly-ash. If separators are necessary the total cost might rule out the spreader type stoker.

Some very definite advantages may be chalked up in favor of the spreader type stokers. They have a wide range as to steaming capacity. Usually the investment and depreciation is lower than on other types, and a longer useful life is realized. Efficiency compares favorably with other types. The power consumption is lower in almost every instance than that for other types such as the underfeed. Other advantages such as load flexibility and types of coal it will handle have already been mentioned.

Underfeed Stokers

Underfeed stokers will operate best with coking coals. The coal is fed upwards through the fuel bed and as it becomes heated coke masses form and burn. The coking masses retain burning. The underfeed stoker is not usually too satisfactory for wide ranges of coals and low

fusion ash coals often give difficulty. Temperatures in an underfeed stoker fuel bed run high, and this causes the formation of large clinkers with high ash low fusion coal. When the clinkers are formed, fresh coal may be fused in with the ash and be lost to the ash pit. Another disadvantage when low fusion high ash coals are used with underfeeds is that the fuel bed must be "worked" to keep the large clinkers broken up and moved to the clinker grinder (at the end of the grate) or dumping grate. A recent improvement is the use of water cooling by installing boiler circulating tubes in the grates. An additional disadvantage of the underfeed with improper coals is the high maintenance due to grates burning out.

The underfeed is an excellent stoker where high capacities are required and where the load is basic; this type stoker, while it will handle some load fluctuations, does its best work under steady loads.

Due to its arrangement, the underfeed stoker is well-adapted for large furnaces. The stoker is built in sections or retorts and large fireboxes or furnaces are handled by multiplying the retorts. A wide range of coal sizes may be handled by the underfeed, since it is independent of fuel bed thickness. If the source of supply of the right fuel is assured the selection of an underfeed may be a choice well worth considering.

Due to the high draft loss with underfeeds, forced draft is commonly used; preheated air may also be used, but this must be kept at a reasonably low temperature to prevent grate burning.

Underfeeds are capable of high burning rates and represent about the highest capacity stoker available. Where high rates are expected, however, care must be taken in proportioning the furnace and boiler so that slagging difficulties are avoided.

Importance of Furnace Design

While coal is the first consideration when stoker equipment is being considered, furnace design is also an important factor. With spreader stokers waterwall cooling is essential except in small installations where the heat release rates are low. If arches are used with spreader stokers they should be water-cooled. By water-cooling the walls of the furnace and the arch higher efficiencies are obtained through improvement of the radiant heat absorption. Due to the free burning with spreader stokers, furnaces are often equipped to provide for air admission over the grates. The overfire air permits the correct amount of excess air to be used to minimize smoking, and burning is improved by the turbulence that is created over the firebed where the smaller particles of coal are burned.

With underfeed firing attention must be given to the furnace cooling particularly if low-fusion ash coal of high ash content is used. As mentioned before, the trend in fuels is in this direction and therefore the stoker equipment should be purchased for such conditions.

When using high ash coals with an underfeed stoker the fuel bed thickens up quickly due to clinker formations; clinker in the fuel bed reduces air flow which raises the temperature, in some instances, to a point where molten ash particles are carried off the fire and deposited on the furnace walls. In large installations where the firing rates are high the deposits of molten ash, or slag, on the walls act as insulation so that the proper amount of heat is not absorbed. Eventually, if not prevented, this condition gets worse and surfaces of tubes get fouled to the point where the unit must be shut down for cleaning. This is expensive since it involves a lot of manual labor; it also increases maintenance due to the erosion of the refractory.

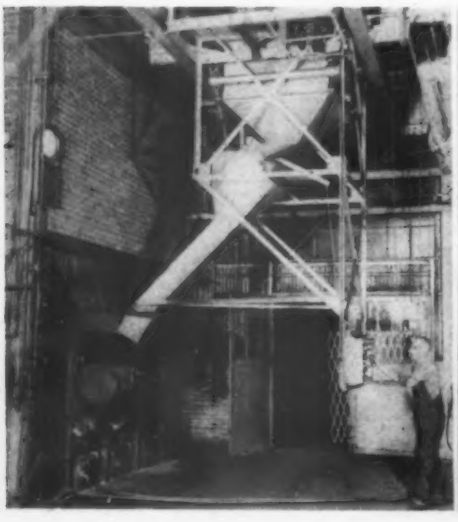
It is well to assume that furnace cleaning will be necessary if the coal to be used with the stoker is high in ash. A system of retractable soot-blowers has been used with good results in such installations. The soot blowers are used to keep the heat-absorbing surfaces clean as the molten ash is deposited and in this way the accumulation is not permitted to build up.

In selecting a draft arrangement it is often desirable to incorporate an air heater since this reduces the exit gases and further improves the overall efficiency. In arranging the draft system care should be taken to keep the preheated air at a reasonable temperature. High temperature air going through the grates will be conducive to clinker formation and grate burning which will aggravate the slagging conditions noted above. Many preheated air systems are provided with cold air bypasses so that at all times air of the proper temperature flows to the grates. With units of more than low ratings, forced draft is recommended for underfeed stokers.

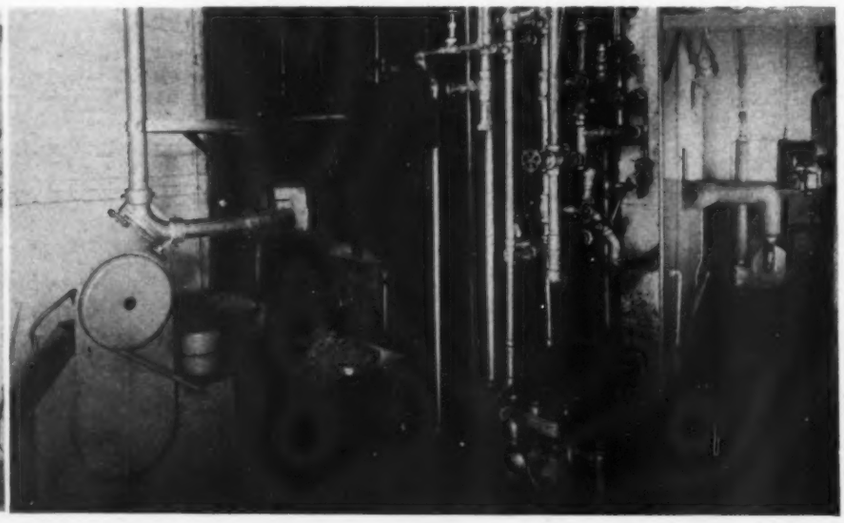
It is of utmost importance that

(*Continued on page* 346)

Stoker fed from overhead suspension bunker



Underfeed equipment converted to spreader type





Railroad buyers are spending four million dollars a day to modernize, maintain, and operate the nation's vital rail services

By DONALD V. FRASER

President
Missouri-Kansas-Texas Railroad
St. Louis

Address at the annual meeting of the Purchases and Stores Division, Association of American Railroads.

The Purchasing Agent's Part in Meeting Transportation Needs

THE war on the battlefields is over. Perhaps one of the greatest lessons we have learned from the years through which we have just passed is how dependent our modern civilization is upon transportation. The war focused public interest on the railroads because of their capacity to handle mass transportation more effectively than any or all other forms of transport.

The nation is already well into the post-war period—the period of so-called reconversion and rehabilitation, of turning from war to peace, although somewhat hampered by strikes and labor unrest. The railroads are playing a great and important part in this reconversion. They now stand on the threshold of a new transportation era, unsurpassed by any competitor in personnel, plant, or ability to contribute immeasurably to the post-war progress of the nation.

Thus the continued flow to the railroads of needed materials is as vital today as at any time in our history. Much-needed requirements for modernization and rehabilitation of track, facilities and equipment are enormous, and procurement presents a challenge to Purchasing and Stores Officers to provide material where and when needed at the proper cost. In meeting this challenge, procurement officers are well aware of the great contribution their purchases make to the economy of our country. During the past five years—1941 to 1945, inclusive—you were called upon to spend over *seven billion dollars for* fuel, and material and supplies to keep all Class I railroads running. And for many years to come you will guide the flow of more than a billion and a half dollars yearly—*four million dollars* every day—into the channels of trade, a stupendous sum and a great responsibility.

The systematic plan in use on practically all railroads, centralizing material control in the Purchasing

and Stores Department, seems to me now to be more important than ever. It must be, if we are to hold our investment in materials within reasonable bounds and at the same time satisfy material demands with promptness and adequacy.

New rail, track accessories, ties, lumber and many other needed items, are still in short supply. Production and procurement of these materials still poses a real problem. There is no "easy way" to solve the material problems of the railroads. There must be a constant study of market conditions and material requirements; a thorough knowledge of your railroads and its plans—the trend of our industrial nation and its relation to those plans.

About fourteen years of my career in the railroad business were spent in railroad purchasing departments in various capacities. During that time I observed the high regard universally held by management for its Purchasing and Stores Departments. There has never been any question in my mind in this respect, and the answer has always been, and continues to be, inescapable, whether it be in the railroad or any other industry, that the Purchases and Stores Department *must* rank high in the eyes of management.

Any inefficiency in these two great departments vitally influences the fortunes of a property. Bad judgment and the absence of good public relations on the part of purchasing and stores officers can quickly destroy whatever great efficiency might exist in other phases of railroad operation. The Purchasing Agent and General Storekeeper are important cogs in the whole scheme of management, and their individual value can only be measured by the degree to which they contribute to the success of top management.

It is not my intention to try to cure the "ills" of your departments, nor is it within my ability. If I could give you some magic "mumbo-jumbo" which would procure materials for you I would gladly do so. But I do not have such a formula, and, so far as I can ascertain, neither does anyone else. It still boils down to hard, honest work. We cannot relax because the war is over—we are just beginning. The Purchasing and Stores officers still have a big job to do, and you can do it the same way you did the war job—roll up your sleeves and go to work.

Perhaps you can eliminate some troubles by use of acceptable substitutes when standards are unobtainable. Further simplification of stocks, and research, in its broadest concept, will help. The development of new and economical materials and devices will open up avenues of saving and conservation.

One thing is highly important, in my mind. Common counsel between the Purchasing and Stores Department and the department using materials, thus establishing a forthright, purposeful and realistic cooperative policy in requisitionaing and use of material, is an indispensable requisite to safe, economical and efficient operation.

One characteristic which is almost axiomatic of any railroad employee is the importance of alertness. The ambition to learn all there is to know about his job, and beyond that, to know as much as he can about the problem of the other fellow's work. This is a particularly valuable asset of a purchases and stores man, for he is not only required to be an authority on the problems of supply and demand, market conditions, etc., but he must also have a practical or reasonable knowledge of the practical usage of materials.

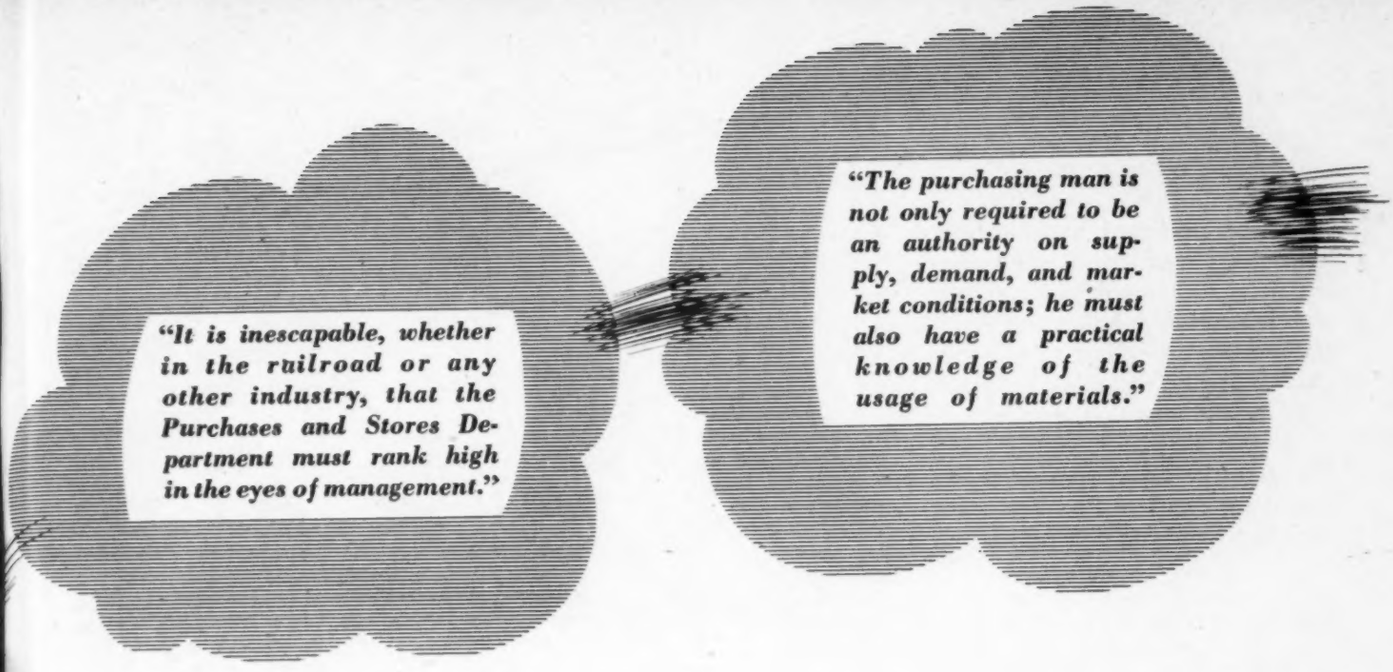
Once in a while we find an individual who is content to limit himself with the job at hand, explaining that, after all, his obligation is to secure the material desired and properly deliver it when it is needed, after which his interest ceases. Management leans heaviest, however, on that purchasing and stores

"Systematic centralized material control in the Purchasing and Stores Department is now more important than ever."

"In every instance of improvement, addition or replacement, the purchasing department must and does play an integral part."

"There is no limit to the value of a purchasing officer to his management."





officer who has the greater interest of determining whether the thing that he has been instrumental in procuring for his property has satisfied the need for which it was purchased. True, other departments have a responsibility, particularly involving technical materials, to specify and observe the right kind of materials for the use intended, but if the supply and stores officer has the proper interest there are ways and means by which he can determine over a period of time whether such materials have fully satisfied the actual need.

The point I wish to stress in this regard is that there is a limit to the value of a purchasing and stores officer to his management, and this can only be accomplished by continuing and deep interest in all the ramified phases of purchasing and stores work.

The "Katy", its management and its employees, are confident in the future and what it holds in store for the railroad. There is definitely a spirit of optimism which prevails from the lowest-ranking employee to the chairman of the board. And with this spirit prevailing, we are planning for an even bigger and greater railroad in the future than we have had during the war years.

The "Katy" is fortunate in serving a territory which is probably the fastest-growing industrial section in the nation today—the Great Southwest. But the economic welfare of the Southwest can improve only as the economic welfare of the nation improves—Thus the "Katy", in building for the future, builds not only upon its confidence in the Southwest, but upon its confidence in the entire nation.

All railroads, then, as well as ours, I believe, can look forward with a spirit of optimism. Most railroads today, like the "Katy", are planning for more modern streamlined passenger trains; swift, powerful freight locomotives; faster freight and passenger schedules; better ballast, heavier steel—all those things which give passengers and shippers the utmost in all-around comfort and service. And in every instance of improvement, addition or replacement, the Purchasing and Stores Department must and does play an integral part!

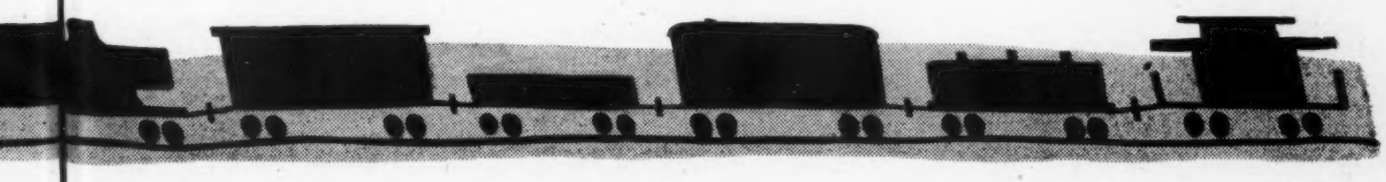
In the research and reports of your committees you can find the solutions to a great number of your problems.

For instance, the handling and preparation of scrap—its classification and sale—is something that is ever with the railroads, in peace or in war. And here, too, when handled efficiently, is a constant source of substantial revenue to the railroads. The suggestions of this committee can mean many dollars and cents to your system and provide a solution to the vexing shortage of scrap with which the mills are now faced.

Hand in hand with the preparation and sale of scrap we find general reclamation. This committee, which is composed not only of purchases and stores representatives, but also of representatives from the Mechanical Division and Engineering Division, can point the way to large savings for your division and your railroad. It is an important committee, and through general reclamation you can effect great economies in the reclaiming of many materials.

The procuring of forest products —ties and timbers and poles—is of particular importance, for rehabilitation programs call for a great many of these. Equally important are the studies of the fuel committee, particularly in relation to diesel fuel, which, to many of us, is a comparatively new commodity, but which, with the addition of more and more diesel power, will be an ever-in-

(Continued on page 350)



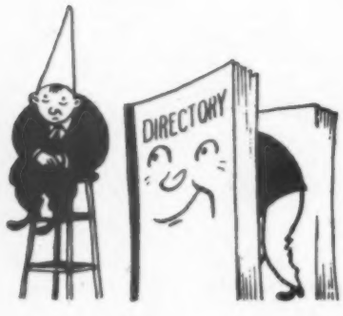
A list of pertinent questions to help the executive in analyzing the strong and weak points of his staff without depending on casual impressions or trying to put the elusive human equation in terms of a mathematical formula

It's a practical questionnaire, based on eight years of experience in purchasing and personnel work



THE PURCHASING AGENT EVALUATES a BUYER

By BOB RAGASE



I. His Professional Ability

1. Does he buy quality goods that "stand the gaff"?
   Do these goods please the workmen who use them?
   Do the departmental executives feel that he might have bought something else "just as good"?
   When he uses his own judgment in buying, does he exhibit wisdom or even common sense?
2. How are his contacts?
   Does he buy for quality, low price and service without prejudice of any kind?
   Does he know where the materials are available and what competitors will deliver the goods most quickly?
   Does he know the directories and the local markets equally well?
   Does he know the important men who can serve him on a moment's notice?
   Can he expedite quickly, without apparent effort, or does he send too many telegrams to too many unimportant people?
   Does he complete a transaction in one call or does it take three for him to "deliver the goods"?
3. Does he have any technical ability?
   Can he read blue-prints, understand specifications and engineering detail?
   Is he able to calculate total requirements and plan intelligent forecasts?
   Can he make reasonably accurate estimates?
4. Does he show energy in his work?
   Is he enthusiastic about his job or does he seem to have some mental reservation toward it?
   Does he have that optimistic feeling that he is an important man doing a great piece of work?
   Does he respect the industry in which his company is engaged?
5. Is he versatile in the sense that he has broad universal knowledge of the economic and technical problems that confront his industry, and is also equipped with intensive and thorough information of his specialty line?
6. What signs does he show of professional growth?
   Does he read any books that contribute to his knowledge of his work?
   Is he enrolled in any correspondence courses or night school classes?
   Does he make any attempt to learn from the workmen in the plant?
   What trade journals and business publications does he read regularly?
   Is he alert on market conditions, taking time to read the news letters and daily columns?
   Does he make any attempt to observe Washington affairs and federal regulations?



II. His Ethics

1. Does he accept gratuities?
   Does he ever buy a salesman a meal in return for one the salesman bought him?
   Is his home furnished with Christmas presents?
2. Does he know the meaning of the word "confidential"?
   Does he blab everything he knows all over the plant?
   Does he discuss methods with his lodge brothers?
   Does he confide too much in salesmen?
   Would he reveal price policies to a salesman?
   Does he try to attain "big shot" status with the stenographers by revealing things that should be kept secret?
   Do his wife, sister, and in-laws "tell all" at the bridge club?
   Can he keep to himself the little personal matters he knows about his associates?
   Do his fellow workers regard him as a trustworthy confidant?
   Does he discuss family or personal matters publicly?
   Does he have any idea of conversational propriety?
3. Does he know and practice the Golden Rule?



III. His Efficiency

1. Can he combine a half-dozen requisitions intelligently in a single order, or does he write an order for every requisition?
   Do his orders contain essential details or do they consist of mere trivia?
   Does he write many alterations, or does he keep his orders free from ambiguities and generalities that necessitate alterations and corrections?
2. Does he schedule his work or just "muddle through"?
   Can it be said that he plans his work and works his plan?
   Is he considerate in budgeting his secretary's time so that she does not have rush periods followed by a spell of inactivity?
3. Is he getting the most out of the personnel and equipment assigned to him?
   Does his work reflect a *pro rata* appreciation of the overhead charged against him?



IV. His Punctuality

1. Does he procure materials quickly or does he procrastinate while requisitions mount and requisitioners become impatient?
   Does he send out inquiries the same day he receives a requisition?
   Does he make decisions promptly when the bids and data are at hand?
   Does he advise the successful bidder as quickly as possible after the deadline for receipt of bids?
2. Does he finish all of his assignments before he joins the bull session, or does play come first?
   Can you rely on him to "follow through" on any work you assign to him?
   Does he finish his work the same day it is assigned to him, or does he pride himself on being a "Five O'clock Executive" who delights in showing a desk stacked with unfinished business?
   Does he ever ask for additional work or clear his desk ahead of schedule?
3. Is he ill often enough to attend

all major sports events?

Is he working when the eight o'clock whistle blows or is he gone when the five o'clock siren sounds off?

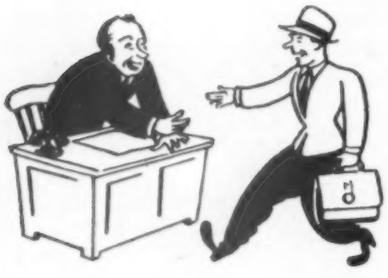
Does he go early to make up for coming in late?

Will his digestive system permit good health on anything less than a two-hour lunch period?

When he takes time away from his desk for buying tours or interviews, does he return with the business transacted or does he use these opportunities for some personal activity?

Does his car break down frequently and does he get snowed in during bad weather?

Does he object to working overtime when it is necessary?



V. His Ability as a Contact Man

1. Does he answer his mail promptly?

   Does he keep to his subject, answering the questions asked and giving the information desired?

   Are his letters clear, concise, to the point, and worthy of the company letterhead?
2. To what extent does he put courtesy into his letters?

   Does the reader experience a sensation of good will on receiving his letters, or is resentment aroused?

   Does he choose words that build friendship even in the briefest forms of correspondence?

   Does he show respect for the addressee?
3. When he writes letters, does he take into consideration the laws of contract that may affect the transaction?

   Does he consider carefully the phrasings so that an inquiry may not be construed as an order or an acceptance?

   Does he word his inquiries carefully so that an unethical vendor may not take advantage of loosely worded phrases?
4. What is his "telephone batting average"?

   Does he have many calls in a few minutes or few calls in many minutes?

   Does he answer promptly, or play "hard to get"?

   Does he plan a conversation before placing a call with the operator, or trust that it will ramble along to the desired conclusion?

   Does he ignore the fact that long, unplanned calls are more expensive, infringe unnecessarily on the time of the person called, and tie up busy long distance wires?
5. Is his telephone voice pleasant? Is his diction clear?

   Does he make any effort to improve his telephone voice?

   Does his telephoning disturb other office workers?

   Are other workers forced to stand by until his broadcast ceases?



VI. His Status as a Supervisor

1. Can he instruct without becoming pontifical?

   Can he argue his side of the case without becoming dogmatic?

   Can he put across instruction in such a way that his subordinates do not suspect that he is teaching them?

   Can he outline quickly or set up a system of simple rules to solve those problems that recur every day?
2. Does he set an example for his subordinates to follow?
   Is he guilty of errors or misconduct that would detract from their credit?
   Does he feel that his position justifies any errors or irregularities that he commits?
3. Is he patient with his subordinates?
   Does he forgive them "seventy times seven" or is he irked at the second error?

   Does he use any systematic method of teaching or coaching?

   Has he tried the public speaking rule whereby the teacher repeats the fact-to-be-learned three times, in three different ways, thus practically insuring its reception by listeners or pupils?

   Has he tried the modern 4-step teaching method whereby he (1) tells them, (2) shows them, (3) coaches them, (4) tests them?



VII. His Status with Fellow Workers

1. Would the morale of the office go up if he were promoted?

   Do his associates think he is deserving or do they feel that his secretary is holding his job for him?

   Do they regard him as essential to the organization, or do they feel that his position is justified chiefly by his uncle's interest in the business?

2. Can he cooperate with the other buyers in effective teamwork?

   Is he willing to substitute for another buyer who is ill or on vacation?

   Does he serve effectively in positions other than his own?

3. Does he ever take time to help his subordinates?

   Has he the feeling that it is beneath his dignity to help a stenographer proofread a contract or assist a clerk in checking a tricky extension?

4. How does he rate with the foreman and operators out in the plant?

   Are they satisfied that he is doing his best to get them good materials and service?

   Is he able to discuss specifications with them, suggest substitutes, recommend minor changes and iron out difficulties?

   Are the requisitioners glad to hear that their requisitions have been assigned to him, or do they start to grumble?

5. Are his conferences with the operating men always subject to review by a higher executive, or can they be relied on to produce the answers and solve the problems?

   Does cooperation exist between his desk and those of the operating foremen?

   Does he give the messengers and stockroom boys the same type of service that he gives the superintendent?



VIII. His Appearance and Manner

1. Does his appearance rate his job?

   How does he appear to the salesmen, technical consultants, and others who have business at his desk?

   Do the boys on shift work think he is a dude?

   Are the stenographers afraid to hang their coats next to his?

2. How is his office conduct?
   Is he quiet and attentive to business or does he regard himself as the Chief Office Comedian?

   Does he whistle, drum with his fingers, or tap with his feet?

   Is he prone to interrupt others who are working?

   Is he considerate of the feelings of others?

3. What percentage of his time does he devote to making passes at the stenographers?

   Does he have a personable way with the girls that keeps them happy and makes them want to work for him?

   Is he dating the girls after office hours?

4. Is he personable in his work?

   Is he a grouch or complainer?

   Does the office force feel sorry when he is sick?

   Does he kowtow to the plant manager and bully the new clerk who just started last week?

   Can he discuss a problem with a superior without becoming a "yes man"?

   What ratio of friends and enemies does he have throughout the plant?

5. Does he habitually use profane language?

   Is his language objectionable to his fellow workers?

   Does he ever make use of such phrases as "Thank you", "I beg your pardon", "Sorry — it was my fault", "May I help you"?

   Does his vocabulary include any words of praise for his co-workers?

6. Does he bring his personality to work with him?
   Is he witty without being "smart" and without inserting a personal barb?

   Can it be said that he has personal charm?

   If a member of the board of directors suggested that you bring some of the boys along for lunch, would you include him?



Announcements such as these were dropped from a low-flying surplus bomber.

PURCHASING AGENT



PUBLIC interest often clashes with popular sentiment, and when such sentiment is expressed vocally by a large segment of the population, it overrides better judgment. So it is with the disposal of war surpluses.

From the outset, disposal has been interlaced with so many difficulties that administrator after administrator has given it up as a thankless and impossible job. Still, it is a job that has to be done. The volume of surplus is too big to ignore. Even too big to be dumped unceremoniously into the ocean, as was suggested at a national convention of the NAPA by the then Mayor of New York City, Fiorello LaGuardia.

Since the end of the war, disposal policies have been shifting with the wind. This is not mere caprice. Every Government agency must keep its eye on Congress, which is the final arbiter of policy. Congress, in turn, is highly sensitive to public opinion in a matter so volatile as war surplus.

Limitations on Policy

In final analysis, the question involved is not what is the best and most efficient method of disposal within the strict limitations laid down by Congress.

With this in mind, it becomes easier to understand some of the courses followed by the War Assets Administration.

Most controversial of the policies followed has been that involved in disposal of surplus to veterans. A war veteran has a priority to buy surpluses. There is certain justice about the claim of veterans.

Where the priority system goes awry in the process of permitting individual veterans to pick over billions of dollars worth of goods to find the needle in the haystack which he individually may want — and to permit him to buy it ahead of everybody else. That is what the veteran wants. That is what he expects. In the public eye, this seems reasonable, and traditionally the veteran after the war becomes the most vocal segment of the population.

Only one thing then remains, and that is to give the veteran what he or she wants. Let him look, see, and feel surplus goods. Bring his wife, sister, mother and aunt along to help him choose. In short, to still his clamor by going into the retail business.

Obviously, the procedural red tape of Government does not lend itself to retail merchandising. Civil service employees cannot become salesmen and saleslades overnight. The War Assets Administration cannot acquire the facilities of a modern, up-to-date department store, with its myraid of clerks, floor walkers, complaint departments, adjusters, wrappers and stock clerks.

Still the pressure and complaints have become so great that an approach toward retail selling has been made. WAA has set up a retail sales procedure to give individual veterans everything from silverware to shoe polish.

Experimental Sale

Guinea-pig sale was held at New Orleans. A major problem was to collect saleable items from among the military-surplus stores. Navy depots had to be ransacked for re-

tail bargain goods, with one eye especially cocked towards the hard-to-get consumer items which have not yet reached the civilian marts in heavy supply.

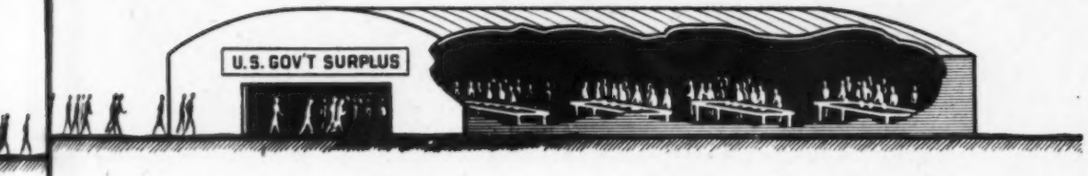
A key figure in setting up the sale, drawing consumer supplies from the military depots, and establishing store and sales procedures was a purchasing agent. Robert Lobban, former P. A. from Helmco, Inc., Chicago, Ill., as Chief of Disposal Procedures of the New Orleans Regional Office, WAA, followed accepted purchasing practices in assembling sale goods. Lobban canvassed stocks of available goods,



Veterans swarm to Government bargain counters.

ORGANIZES VET STORE SALES

By A. N. WECKSLER



and worked out acquisition and handling procedures.

Goods ranged from pipe cleaners to telescopes. Prices ranged from one cent to a hundred or more dollars per item. The sale was widely publicized in the press. Leaflets announcing the sale were dropped from a surplus plane.

Bargain Hunters

The sale itself was held in a surplus plant. It was a big plant, but not too big for the first-day crowds that swarmed the opening. Veterans were attracted to the sale like bees to honey.

Mainly, they monopolized the silverware and linen counters. Shirts and sheets were fast movers. Pots and pans sold fast. Hand tools were highly desired. Hip boots and some surplus mail sacks were slow movers and attracted little attention. Actually, the sale moved in much the



Purchasing Agent Robert Lobban, who as Chief of the War Assets Disposal Procedure Division in New Orleans, organized the guinea-pig retail sale of surplus for veterans. He is seated at his desk talking to R. Vernon, his assistant. Looking on is John S. Devlin, Coordinator of operations for WAA in New Orleans, who did some purchasing for one of the divisions of U. S. Steel Corporation before coming with WAA.

traditional pattern of any bargain day sale. Prices were approximately 10 to 15 percent below going retail rates, but some of the sale goods were not purchasable in New Orleans stores at the time of the sale.

Evaluating the Sale

From all indications the sale was a success. The crowds were there, and merchandise was sold. Lots of it. But to sell the goods, the New Orleans regional office had to be turned upside down. Stenographers had to get behind the sales counter. Practically the whole efforts of the regional office had to be diverted to retail selling. The volume of sales was good from a retail store viewpoint, but the dent in the billions of surplus was negligible.

The day's business was good. However, if the entire cost were to be counted, the overhead of the sale was high.

Retail Methods for a Wholesale Problem

War Assets officials realize that from a practical standpoint, Government is not fitted for live-wire retail merchandising. Further, they realize that when retail stores are fully stocked with what are now scarce goods, the considerations of credit, service, guarantee of quality, variety and convenience will far outweigh the 10 or 15 percent price consideration that Government can offer in a retail sale.

While presently the retail sales loom large in the public eye, they will account for a negligible amount when the final tally on surplus disposal is posted.

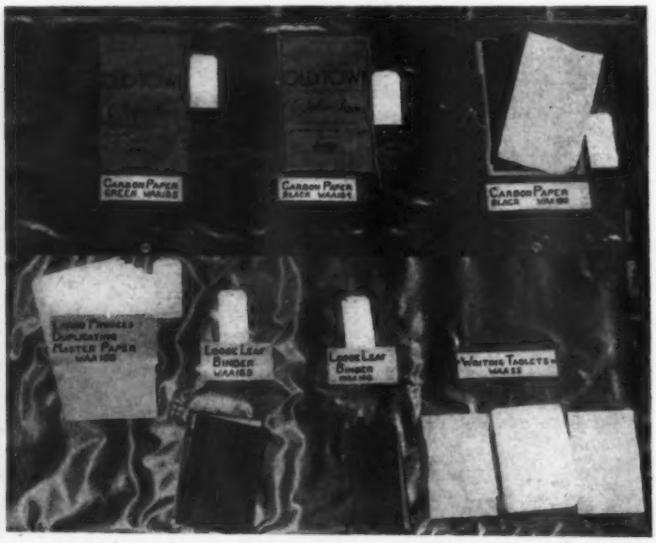


Full-page advertising space was used in local newspapers.

For the ladies. Not chic, but cheap.



Office supplies are popular bargain items.





Director Carl Riggs is charged with the spending of approximately $10,000,000 annually at an administrative cost of six-tenths of one percent.

West Virginia's centralized purchase system merits public confidence and praise for its record of accomplishment and efficiency

By H. F. FOWLER

State Purchasing Department is Big Business

WEST VIRGINIA'S State Department of Purchases "is one of the best administered departments of the State, as it is run on a strictly business basis with all the books open on the table," editorialized a state Republican newspaper in several paragraphs of praise for this department operating under a Democratic administration.

The Department has built this reputation by adhering closely to its purpose of creation, "to effect, through a system of centalized purchasing, every possible economy in the purchase of commodities, printing, and contractual service for all the State's departments, schools, and institutions."

By instituting every possible efficiency and service, the organization has, in its short ten years of existence, risen to a place of respect which creates a minimum of political interference, and its competence in operation has established widespread admiration for itself and the administration.

Background of Experience

Director Carl Riggs has a background which provides him with many advantages in handling the varied purchases and broad scope of the Department. After several years as secretary and production manager for a large coal firm, he engaged in the real estate and accounting professions. Variety buying was required for a county board of education where he was in charge of accounting, purchasing and building maintenance.

As manager of a district office of the Bituminous Coal Association, Mr. Riggs experienced the responsibilities of his State's major industry. When serving as State Administrator of the Work Projects Administration, he found it necessary to distribute, allocate and account for the properties and activities of one of the largest single organizations ever to function in the state.

Then, after serving as a member of the State Public Service Commission, he began directing the purchases of the State, which, prior to the 1935 Act of Legislature creating the Department, did all of its buying through each department and institution separately.

Experts connected with the administration made an extensive study of purchasing methods being used in various parts of the country. As a result, when the Act creating the Department was passed, the bill incorporated in its provisions the finest procedures and methods known. The Department was placed on an equal and independent status relative to all other state departments.

The Department was authorized to purchase or govern the purchase of everything bought with state funds considered movable material, products or merchandise. The director was empowered to purchase or contract for merchandise required by all state departments, apply and enforce standard specifications, set up and maintain central store rooms, establish and maintain a laboratory for testing commodities, and to prescribe the manner in which commodities must be purchased, delivered, stored and distributed.

Scope of Activities

The Department does not acquire titles, buildings or real estate, nor purchase stock for the state liquor stores. However, it does buy everything used in construction, material and labor. The achievement of economy in personnel and in quantity discounts has saved the state hundreds of thousands of dollars annually over the old method.

The employment of all personnel is left to the discretion of the director. Mr. Riggs has employed seventeen people; three buyers, two of whom have more than thirty years experience in the buying field; sec-

retaries, stockroom clerks, and clerks and typists who completely handle up to 60,000 requisitions which pass through the department in a normal year.

To meet this demand with their facilities, the department has had to economize on time and existing facilities and necessary activities. The buyers are centralized with special categories to purchase. Each employee has definite set procedures and activities to accomplish to manage this volume of work in which a fifty-page requisition is not uncommon.

A large stockroom supplies state departments with stationary and related supplies. This standardized merchandise is bought in large quantities and resold to individual departments at cost price. Volume purchases of standard commodities are permitted by a revolving fund fixed in amount by the Governor upon the director's recommendation.

Methods of Control

Everything purchased with state funds at a cost of more than five dollars must pass through the Department in the form of requisitions. These petty purchases, such as items of repair, are made by departments from day to day without prior authority, but the director defines to a department what constitutes a petty purchase. These purchases are made on forms prescribed and supplied by the Department, which receives copies for each purchase. .

The requesting department sends a requisition, prepared in a manner designated by the Purchasing Department, to the Budget Director's office where it is determined if that department has sufficient funds to cover the requisition and to encumber funds for final payment. The requisition then passes on to the Purchasing Department where the buying is left to the discretion and integrity of the director, subject to the provisions of law.

A department or institution requiring perishable commodities daily may purchase them in their local community, at market prices, by first obtaining monthly permission from the Director, and giving an estimated figure on the months' necessities.

Provision is made for emergency purchases arising from unforseen causes, such as, delays by contractors and transportation, and unanticipated volume of work. The director may authorize, in writing, a department to buy specified commodities in the open market for immediate delivery without filing a requisition. But a complete record, including a report of the competitive bids upon which it was based, must immediately be submitted to the director by the head of the buying department with a full account of the circumstances of the emergency.

Should a department purchase or contract for commodities or contractual services contrary to the legal provisions or the Department's rules and regulations, such a purchase or contract is considered void and of no effect. The head of the obligating department is personally liable for the costs incurred, and, if already paid for with state funds, the money may be recovered in the name of the state by legal action.

The Department buys the largest variety of merchandise of any business house in the state. The half-million dollar annual purchases for the State University include items from toothpicks and books to airplanes. The Conservation Commission requires such merchandise as deer, firearms, and radio communications equipment. One requisition shows 8,000 pairs of rabbits. Drugs and chemicals are necessary for hospitals and schools, while the Road Commission requires such items as pins, bulldozers, building materials, bridges, and contractual services.

Variety of Purchasing

A wide variety is also found in the Department's selling, including obsolete, surplus and manufactured materials or products offered for sale by the State.

The Department is also responsible for transfer to or between departments of commodities and equipment which are surplus with one department but which may be needed by another. .

One large item is the purchase of all printing for the state, which is purchased on a two-year contractual basis, and runs three hundred thousand dollars or more a year.

The Department is responsible for the printing and binding of the reports of the decisions of the State Supreme Court. The director is buyer and custodian of the completed State Reports and the Acts of Legislature, and is responsible for the sale of copies at a price no less than actual cost to the state.

Everything, whenever possible, is purchased through competitive bids and on open-end contract.

The Department stocks stationery and related supplies for immediate delivery to the departments requiring them. A portion of the large paper stock is shown in one of the stock rooms.



The offices of the West Virginia Department of Purchases constantly present an atmosphere of quiet, orderly activity. Don F. Freeman (extreme right), Assistant Director and Buyer, interviews an almost constant stream of salesmen and business men.



The Director prescribes the amount of deposit or bond to be submitted with a bid or contract, and the amount of deposit to be given for the faithful performance of a contract. Claims for commodities and contractual services delivered to departments are submitted, examined, approved and paid in a manner designated by the Director.

By executive order of the Governor, effective July 1, 1941, the responsibility for maintaining adequate insurance on State property and bonds on public officials and employees was placed under the Department, which has effected considerable economy through bulk buying, particularly of fire insurance on buildings. This greatly increased the scope of the Department.

Record of Accomplishment

During the wartime stringencies, the Department had an opportunity to demonstrate its versatility and value. As a central buying unit it was able to locate scarce supplies which an individual department would have been unable to do. The keen knowledge the buyers had of markets and their ability to deal with suppliers, who realized the desirability of the State remaining a customer, maintained a comparatively good supply of merchandise for the state, which operated with surprisingly little shortage troubles.

The Department is constantly searching for new means and methods to facilitate their services. A new commodity system file has just been installed which will provide a buyer with information for which he previously needed a remarkable memory or considerable time to search the files. The new system will give a composite, up-to-date picture at a glance of the complete market history on at least 7,000 different commodities, including grades and prices.

The duties and requirements of the Purchasing Department seem endless. The Department's facilities and services are available to county, school, municipal and other local government bodies within the state, who are required to pay only those expenses which are actually incurred.

Considered the youngest of governmental purchasing departments, the West Virginia State Department of Purchases has acquired, through a business-like method of buying the vast quantities of state requirements, a reputation throughout the state which they plan to maintain and improve.

ORIGINAL

REQUISITION FOR SUPPLIES

TO: STATE DIRECTOR OF PURCHASES
Charleston, W. Va.

We hereby certify that the materials specified below are necessary for our use and that the cost thereof is fully covered by unencumbered balances in the accounts shown.

REQ. No.
DATE

DEPARTMENT OR INSTITUTION
BY

SHIP TO VIA TITLE

THIS REQUISITION IS AUTOMATICALLY CANCELLED SIXTY DAYS FROM DATE OF ISSUE IF BIDS HAVE NOT BEEN ASKED FOR

	QUANTITY ON HAND	QUANTITY DESIRED	DESCRIPTION	ACCT. NAME & NUMBER	TOTAL ESTIMATED COST	PURCHASE ORDER No.
1						
19						
20						
21						
22						

ALL INFORMATION IN REGARD TO THIS REQUISITION MUST BE WRITTEN ON THE FRONT OR BACK OF THIS SHEET.

Approved for purchase,
DIRECTOR OF THE BUDGET
By

The requisition requires approval of the Budget Director to show that there are sufficient unencumbered funds in a departmental appropriation to cover the purchase.

CODE MATERIAL SIZE OR KIND

DATE	ORDER NO.	VEN.	QUANTITY	PRICE	AMOUNT	F. O. B.	DATE	ORDER NO.	VEN.	QUANTITY	PRICE	AMOUNT	F. O. B.

The purchase record provides a complete and up-to-date case history on 7,000 items used by the various State departments.

PURCHASE ORDER

State of West Virginia

DEPARTMENT OF PURCHASES
CHARLESTON

FILE NUMBER, ORDER NUMBER AND NAME OF INSTITUTION MUST APPEAR ON ALL INVOICES AND CORRESPONDENCE.

FILE NO. ORDER NO.

SHIP TO

VENDOR.

MAKE INVOICE IN QUINTUPLICATE INVOICE AGAINST AND MAIL TO →

DATE	ACCOUNT NO.	F. O. B.	TERMS	SPECIFIED SHIPPING DATE

QUANTITY	DESCRIPTION	PRICE	PER	AMOUNT

THE VENDOR IS HEREBY NOTIFIED THAT THIS ORDER IS ISSUED SUBJECT TO ORDERS, RULES OR REGULATIONS ISSUED BY THE UNITED STATES GOVERNMENT OR ANY PROPER AGENCY THEREOF, CONTROLLING OR LIMITING PURCHASES, DELIVERIES, TERMS OR PRICES.

STATE DIRECTOR OF PURCHASES

The purchase order is an eight-part form with snap-out carbon sheets; each copy is identified for purposes of distribution and processing by a distinctive color.

How a small manufacturer in a new business has overcome the problem of getting materials and parts by a policy of helping his suppliers solve their production problems

Expeditor Extraordinary

By THOMAS A. DICKINSON

FOR the sake of convenience, we will say that Charles Zanzow is an expeditor. However, we could as easily classify him as a one-man purchasing department or as a procurement engineer.

Although his present work did not begin until January of 1945, the history of his job dates back to the end of the war with the Japanese. That was when George Thompson, president of the George S. Thompson Corporation of Los Angeles, first thought he had the reconversion problem licked.

Thompson's firm is one of those small plants that sprang up during the war to serve as subcontractors for large war plants. Its particular function was the manufacture of radio parts. Realizing that virtually all of his radio parts contracts would be cancelled as soon as Japan stopped fighting, Thompson began looking around for something that would keep his plant going on a peacetime basis soon after the surrender of Germany. After extensive investigations, he decided that his firm would be most likely to prosper if his reconversion program was devoted to the manufacture of pepper mills.

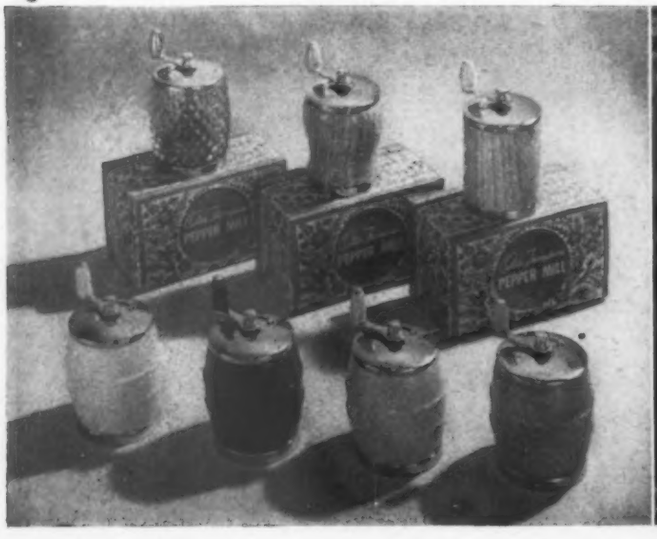
The pepper mills in question are small, decorative grinding devices which are capable of converting pepper beans into ground pepper at a family dinner table. They have been standard household equipment in European homes for years, but they have never attracted much attention in the United States because they were generally produced as sidelines and sold in a more or less haphazard manner by a few of the large manufacturers.

Thompson thought his plant could produce and dispose of large numbers of pepper mills, because he realized that there would be an almost unlimited market for novelties in postwar America. So he called in a consulting engineer and drew up plans for what he thought would be the best line of pepper mills ever produced in this country.

His idea was to have the various wood, metal, plastic, and glass mill parts fabricated by other small manufacturers who were equipped for the work; then to assemble those parts in his factory with equipment that had previously served in the manufacture of radio parts. It seemed like an excellent idea, because he knew of dozens of Los Angeles firms that would be willing to take the parts contracts, and because it would not necessitate large investments in new equipment. With his working force of 20 experienced women assemblers, he figured he could turn out 25,000 pepper mills monthly within six months after the war was over.

Then the war ended and his troubles began. The subcontractor who was to manufacture his plastic parts

The Olde (circa 1945) Thompson Pepper Mill, a novelty item developed to take the place of wartime manufacture of special radio parts.



Equipment and skilled operators were on hand. The problem was to find a peacetime product and the materials with which to make it.



couldn't get adequate tool designs. His metal parts manufacturer was unable to make prompt deliveries because of material shortages. The wood parts manufacturer was having trouble with his machinery. And so forth.

In spite of everything, Thompson managed to maintain production sufficiently to avoid laying off any of his workers prior to the end of 1945. But he was producing 10,000 — not 25,000 — pepper mills each month, and the prospects for improved production quotas seemed slim.



GEORGE THOMPSON
He believes that the best way of solving his own problems is to help his suppliers in solving theirs.



CHARLES ZANZOW
His title in the Thompson Corporation is Purchasing Expeditor. His duties range all the way from re-design of parts, finding substitute materials and processes, repairing suppliers' equipment and training their operators, to finding floor space and mechanics for his subcontractors.

The problem wasn't exactly one of purchasing. He knew precisely what he needed, where he ought to be able to get it, and how much it should cost. The volume didn't indicate a full time purchasing job. A simple purchase order form in triplicate satisfied the "system" requirements. But actual procurement — getting deliveries to support his production program — was another story. He attacked the problem from a novel and highly effective angle. And that is where Mr. Zanzow comes in.

At first, Thompson tried to serve as his own expeditor. But after all, what could he do about a subcontractor who was held up by a bad tool design or broken machinery? He tried scattering his orders among a number of different manufacturers, but still these problems persisted. Then it occurred to him that, if he could help those manufacturers solve their problems, his own would in turn be solved. So he started looking for a practical engineer.

As every industrialist knows, American engineers are much easier to find than American laborers in this day and age. But practical engineers have always been comparatively rare.

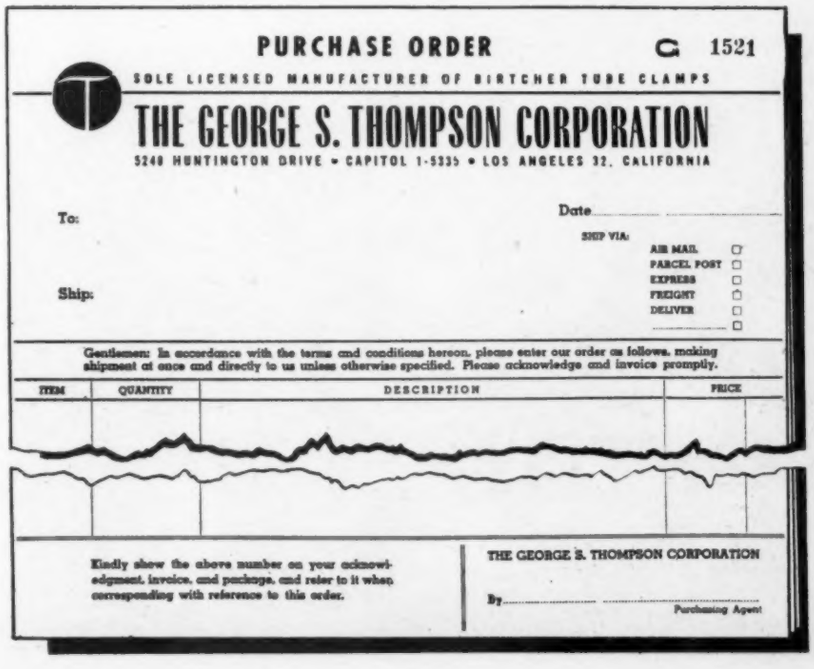
Charles Zanzow filled the bill for Thompson not because he had an engineering degree, but because his experience in the tooling department of Consolidated Vultee Aircraft Corporation during the war had acquainted him with the manifold problems involved in fabricating parts for pepper mills.

Zanzow's duties are unpredictable. Besides remedying bad tool designs and showing semi-skilled workers how to repair broken machinery, he has on several occasions been obligated to canvass Los Angeles employment agencies in order to help subcontractors obtain additional labor.

One manufacturer of plastic parts recently found that he would be unable to fill Thompson orders on schedule, without more floor space. Zanzow spent three days interviewing real estate agents in order to get that manufacturer a larger building in a nearby area.

Metals shortages remain an acute problem, but Zanzow has provided at least a partial solution for Thompson by scaring up a process whereby plastic parts can be electroplated so as to serve as metal parts.

At this writing, Thompson still isn't producing 25,000 pepper mills monthly. But he is coming so close that he is taking on additional factory workers and thinking about opening another plant at Pasadena, Calif. . . . All of which will be another job for Zanzow.



PURCHASE ORDER C 1521

SOLE LICENSED MANUFACTURER OF BIRTCHER TUBE CLAMPS

THE GEORGE S. THOMPSON CORPORATION

5240 HUNTINGTON DRIVE • CAPITOL 1-5335 • LOS ANGELES 32, CALIFORNIA

To:

Date.....

SHIP VIA:

AIR MAIL ☐
PARCEL POST ☐
EXPRESS ☐
FREIGHT ☐
DELIVER ☐
..... ☐

Ship:

Gentlemen: In accordance with the terms and conditions hereon, please enter our order as follows, making shipment at once and directly to us unless otherwise specified. Please acknowledge and invoice promptly.

ITEM	QUANTITY	DESCRIPTION	PRICE

Kindly show the above number on your acknowledgment, invoice, and package, and refer to it when corresponding with reference to this order.

THE GEORGE S. THOMPSON CORPORATION

By.....
Purchasing Agent

Writing the purchase orders was easy, but getting deliveries on the orders was difficult.

How HARVEY MACHINE COMPANY

Large volume and diversity of purchases for three plants are handled and controlled with simple organization and procedure

By FRED M. BURT

DURING the war, the 30-year-old Harvey Machine Company of Los Angeles produced large quantities of some 300 highly engineered war products for nearly forty important companies and for the Army Air Forces, Army Ordnance and the Navy, in its main plant in Los Angeles and in the Harvey Long Beach plant.

Today, in the main plant, besides doing a variety of machine work for other companies, supplemented by a complete engineering and development service, several Harvey (Harcraft) products are manufactured. Such items as the Robot Automatic Washer; towel dispensers; toys, including a tricycle and a plastic speedboat (22-inch Chriscraft model that will run for five minutes with a clockspring); hose nozzles and connectors; and other items. There is also an extensive Army and Navy development department.

The Long Beach plant is now devoted mostly to die-casting, electroplating, painting, airframe assembly and some various types of machine work. Much of the machine equipment has been moved to the third plant, in Torrance, the company's latest acquisition. This $10,000,000 plant, acquired from the R.F.C., was operated during the war by the Bohn Aluminum & Brass Corp., reaching a wartime output of 1½ million pounds of aluminum extrusions monthly. With 400,000-sq. ft. of manufacturing space, and now known as the Harvey Machine Company, Aluminum & Brass Division, this plant will supply hundreds of western manufacturers with extrusions for making screw machine products, plumbing fixtures, window frames and sashes, builders' hardware, furniture, truck bodies and numerous other metal products.

Purchasing for all three plants is centered at the main office, running at this writing at a volume of over $200,000 monthly. The department head is General Purchasing Agent Dorsey Smith, with Assistant Purchasing Agent John F. Kimble in an adjoining office. Another Assistant Purchasing Agent, Walt Morin, is located at the Torrance plant, where he makes direct purchases for the requirements which do not fall in the categories of major or combined purchase procurements. He has one secretarial assistant.

Purchase Organization

White copies one and two are sent to the vendor; number one is the formal order, and number two is the acknowledgment form that should be filled out and returned immediately. If the returned acknowledg-

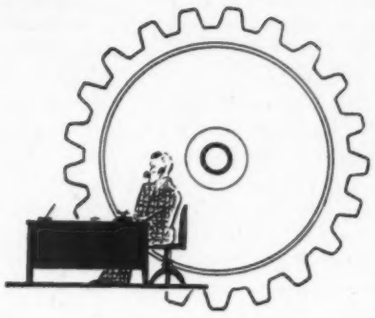
Tool Department



Grinding



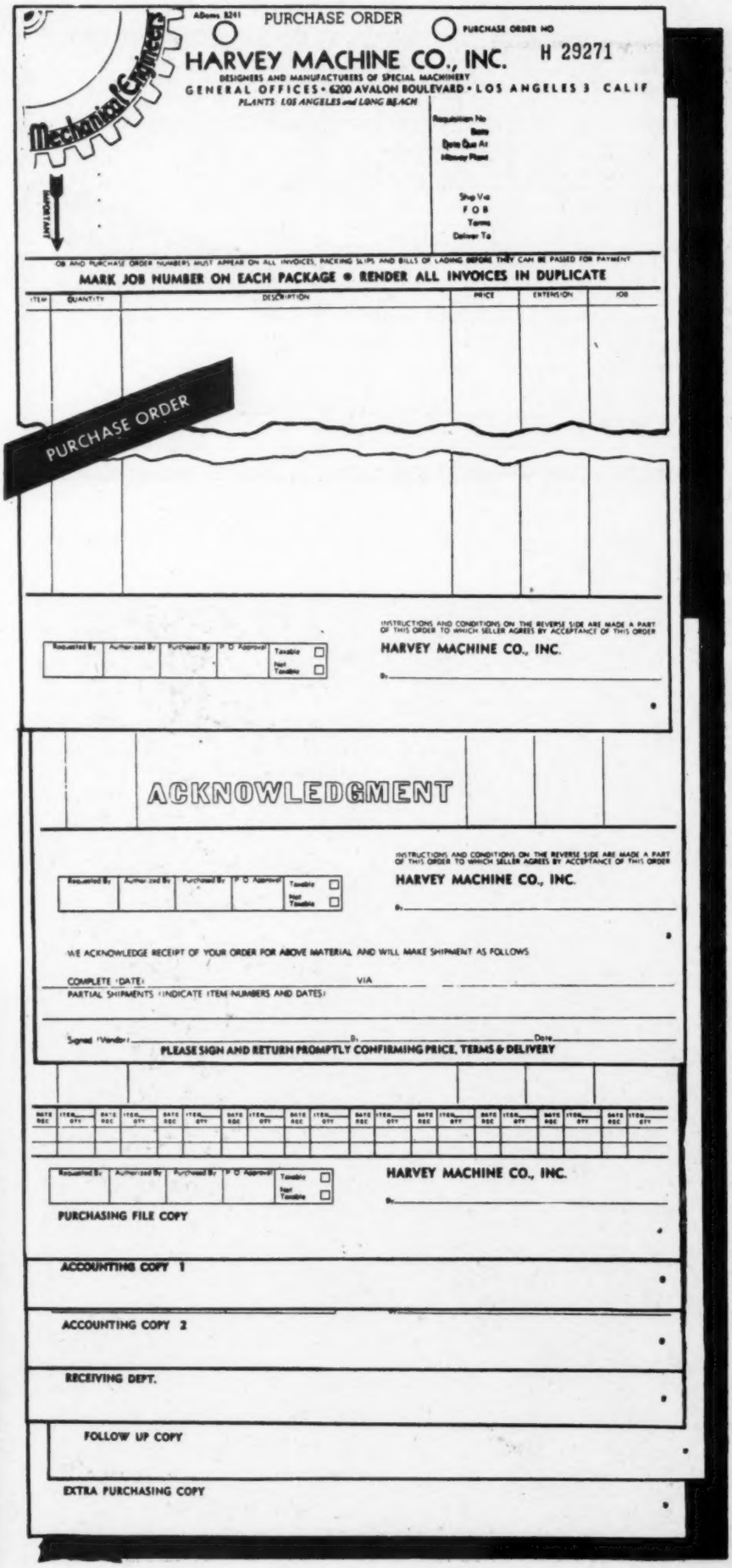
Buys

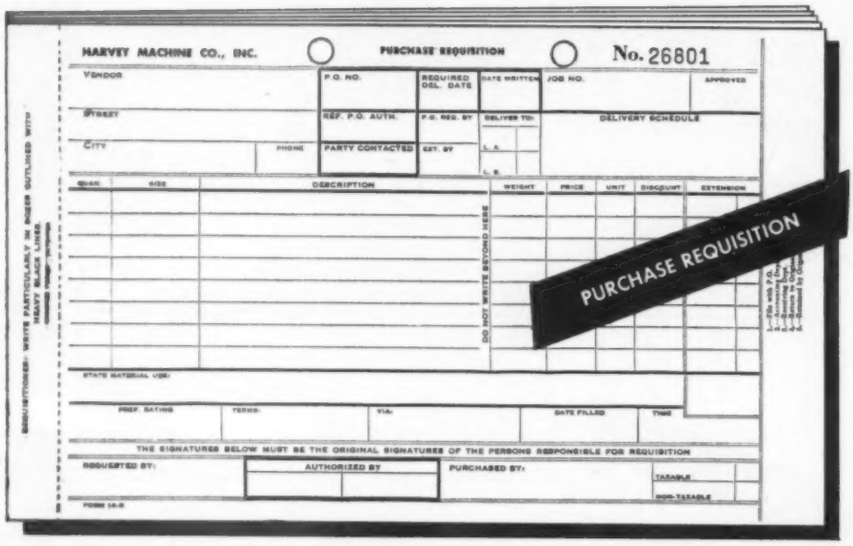


ment contains any changes that the vendor has deemed necessary, it goes to the purchaser who makes these changes on his copy if they are acceptable. If not, he proceeds to contact the vendor to make proper adjustments, which are then confirmed by letter to become a part of the agreement. The returned acknowledgment goes to the department secrtary who stamps it to indicate that it has been read and recorded. If the acknowledgment is not received within ten days, a mimeographed form letter is sent to the vendor, requesting its prompt return.

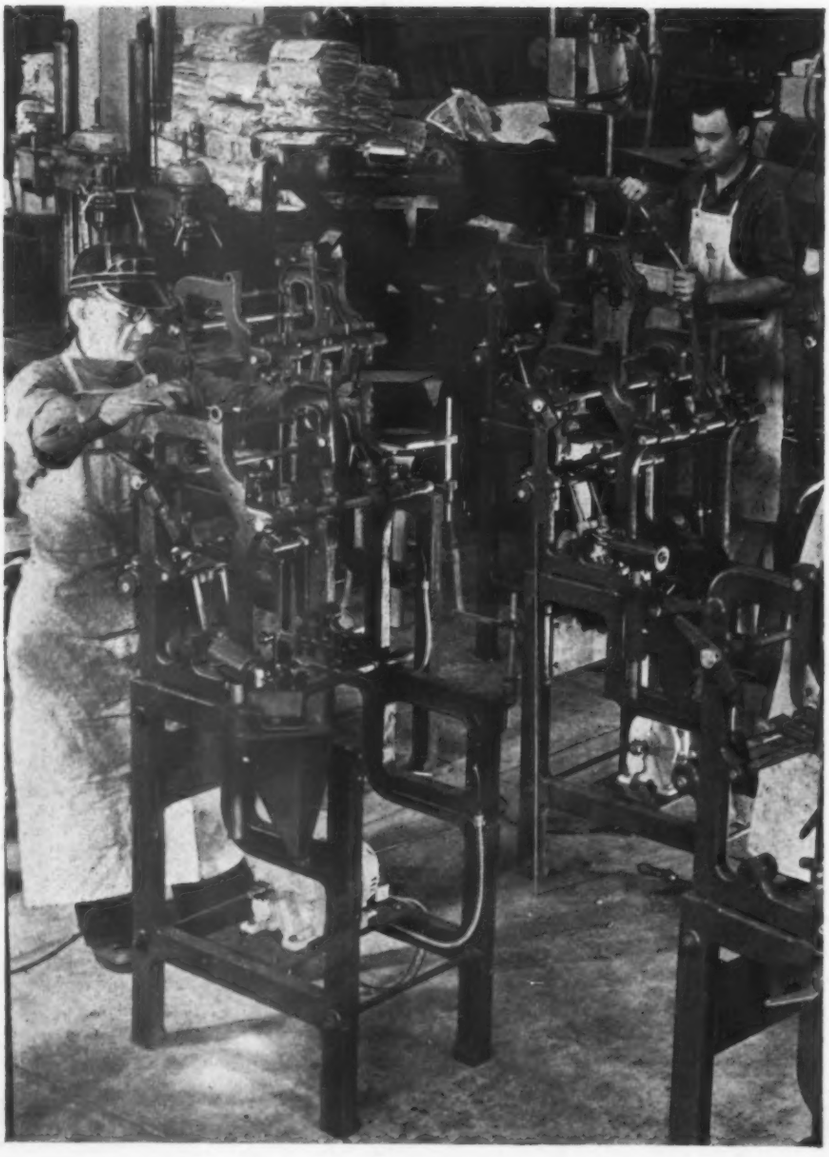
Copy three (canary) is the permanent Purchasing Department file copy. It is placed in the alphabetical file (as to vendors' names) as long as it is an open order, along with the original copy of the pertinent purchase requisition or requisi-







Assembly



tions. Partial shipments are posted to this copy from receiving records, with notations as to date and numbers of these receiving records. When the order has been completely filled, "CLOSED" is stamped on copy, and with the requisition it is placed in a closed permanent file, also alphabetical by vendors' names.

Copy four (pink) the Accounting Copy 1, goes to Accounts Payable with copy two of the Purchase Requisition attached to it. Filed numerically, it is subsequently joined by a copy of the Receiving Record and invoice, this combined data being used in making prompt payment of invoices to take advantage *always* of discounts that may be allowed.

Copy five (green), the Accounting Copy, goes to the Cost Accounting Section. Those orders that represent production items that enter into job products are filed by Job Numbers. Price changes required are made from daily reports from Accounts Payable.

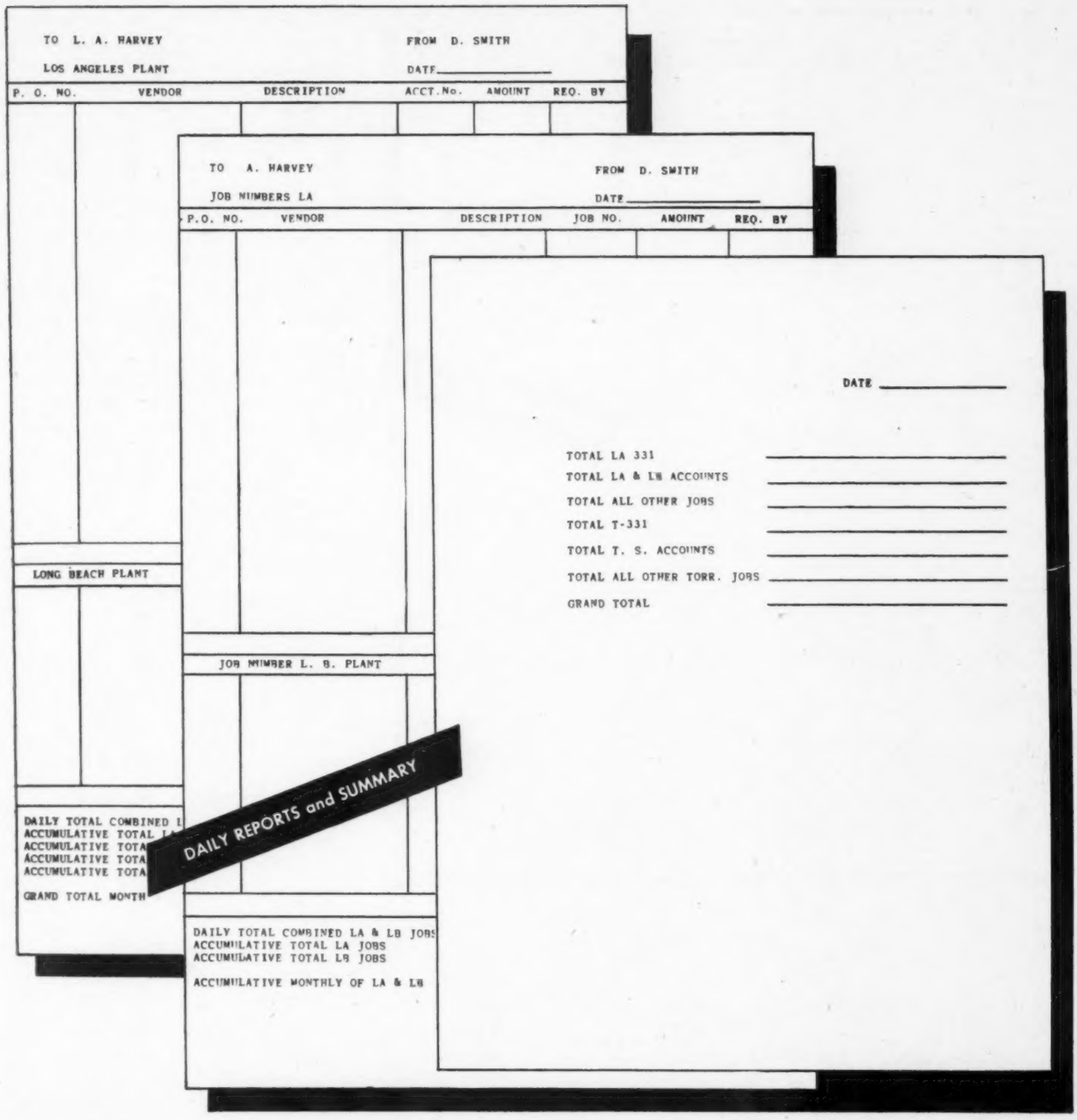
Copy six (gold) goes to the Receiving Department, where it is filed with the department's copy of the related Purchase Requisition.

Copy seven (white), the Purchasing Department Follow-Up Copy, is kept by the buyer handling the particular order, each buyer being his own follow-up man. These copies are reminders and occasion the sending out of form letters or a reminder Postal Card. If the order calls for a future delivery the reminder letter or card is sent out five days in advance of the delivery date if it is a local order, and 30 days in advance when an out of town order.

Copy eight (white) is an extra Purchasing Department copy which is placed in a numerical file for other use (if any) that might be indicated.

Checks and Reports

After the Purchase Order is typed it goes first to the department secretary who pulls the Purchase Record Card relating to past purchases of the same item. These are filed by major classifications and then by specific items in each classification, alphabetically by name. These accompany the purchase order to the buyer, and often on to Mr. Smith for his examination. They are used to check the current purchase price terms, etc., against previous ones. The current purchase is entered on the card before it goes back into the file. There are thousands of these cards, making up case histories of all purchases of each item. New



Precision Testing



RECEIVING RECORD

HARVEY MACHINE CO., INC.

6200 SOUTH AVALON BLVD. • LOS ANGELES 3, CALIFORNIA
PHONE ADams 8241
PLANTS: LOS ANGELES AND LONG BEACH

No. 35558

RECEIVED FROM

RECEIVED THROUGH

VIA

SHIPPER NO.	P. O. NUMBER	PRODUCTION JOB	NON PRODUCTION JOB	DATE RECEIVED
☐ CUSTOMER	☐ HARVEY	☐ L. A.	☐ L. A.	
☐ VENDOR	☐ CUSTOMER	☐ L. B.	☐ L. B.	OUR JOB NO.
☐ INTERPLANT	☐			CONTRACT NO.
☐ PARTIAL	☐ COMPLETING	☐ COMPLETE	☐ OUT PROD	

NOTE:—Check To See If Shipped in Accordance with Purchase Order, Quantity Ordered and Delivery Schedule.

Item	Quantity Received	Unit	Weight	Part No.	DESCRIPTION	Quantity Passed	Quantity Rejected	Rejection Number

RECEIVING REPORT

1

NOTIFY VENDOR AND PURCHASING DEPT. OF ANY SHORTAGES, OVERAGES, DAMAGED GOODS, OR ANY OTHER DISCREPANCIES IN THIS SHIPMENT

	INSPECTION At Source	L. A.	L. B.	
☐ U. S. Army	☐	☐	☐	By
☐ U. S. Navy	☐	☐	☐	By
☐ Harvey	☐	☐	☐	By
☐ Customer	☐	☐	☐	By
☐	☐	☐	☐	By

Counted By
Discrepancy No.
Issued By
Deliver To
Received By

SPECIAL REMARKS

DO NOT DESTROY THIS FORM. WRITE "CANCELLED" IF ERROR IS MADE
WRITE UP FROM ACTUAL COUNT AND CHECK OF GOODS

cards are made out for new items, except for those of non-recurrent nature or of negligible importance. These cards are also used, at times, in advance of making up purchase orders.

In the event of any discrepancies between purchase orders, receiving records and invoices, before Accounts Payable pays the invoice, a Change Order Form is filled in and must be checked and OK'd by Mr. Smith. On some accounts and with some vendors, invoices require an OK from Mr. Smith before payment.

Two daily reports and a general summary are made up in the Purchasing Department, on each of three plants, for Lawrence A. Harvey, Executive Vice President. One lists all purchase order numbers with the vendor, description of items, job number for which the commitment was made, the amount and person requisitioning. Besides this listing of daily purchases for specific jobs, at the bottom of the page, daily totals in dollars are entered, also the accumulative totals starting at the beginning of each month. The other daily report for each plant has the same records but in relation to account numbers, which include all purchases not made for some specific job number.

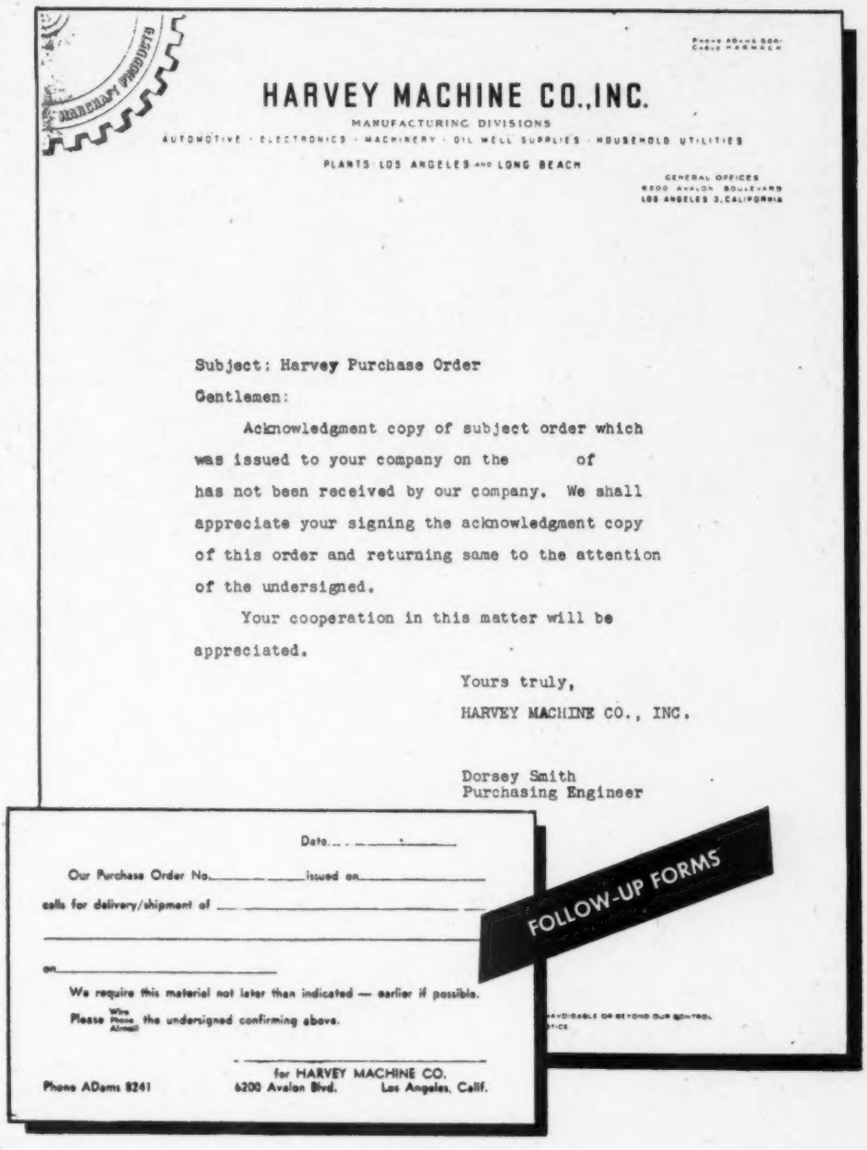
Completing the Purchase

The seven-copy Receiving Record is handled as follows. When material is received and entered on the Receiving Record, Copy one goes to

Inspection



Purchasing for posting to the Purchasing file copy of the Purchase Order. Copies three and five go to Accounts Payable along with the packing slip and freight bill, if any. Copies two and seven are for the use of Army inspectors (if for an Army contract) and/or Harvey inspectors, when the shipment requires inspection. Copy four is kept in the Receiving Department file along with their copies of the purchase requisition and purchase order. Copy six goes along with the material for delivery to the point of use or storage. An index file lists dates against receiving record numbers used on these dates. There is a fair amount of paper work employed in the operation of this procurement system, but it would be hard to find any that was in the least bit unnecessary. It is relatively small in relation to the diversity and number of items and the dollar value of purchases. On the other hand, the coverage given by all of the entries provided for and required on the various forms, enables the almost immediate furnishing of any information required, having to do with procurements. This in turn, keeps the Purchasing Department on top of the job at all times, supplying what is needed, when it is needed, with prompt and good answers to the customary questions and gripes. The checks and approvals required prevent unwarranted purchases through using the combined knowledge of those directly concerned.



HARVEY MACHINE CO., INC.

MANUFACTURING DIVISIONS

AUTOMOTIVE · ELECTRONICS · MACHINERY · OIL WELL SUPPLIES · HOUSEHOLD UTILITIES

PLANTS: LOS ANGELES AND LONG BEACH

GENERAL OFFICES
6200 AVALON BOULEVARD
LOS ANGELES 3, CALIFORNIA

Subject: Harvey Purchase Order

Gentlemen:

Acknowledgment copy of subject order which was issued to your company on the of has not been received by our company. We shall appreciate your signing the acknowledgment copy of this order and returning same to the attention of the undersigned.

Your cooperation in this matter will be appreciated.

Yours truly,
HARVEY MACHINE CO., INC.

Dorsey Smith
Purchasing Engineer

Date

Our Purchase Order No. issued on

calls for delivery/shipment of

on

We require this material not later than indicated — earlier if possible.

Please Wire Phone Airmail the undersigned confirming above.

for HARVEY MACHINE CO.

Phone ADams 8241 6200 Avalon Blvd. Los Angeles, Calif.

FOLLOW-UP FORMS

Spot Welding



PURCHASE RECORD

ARTICLE SUBSTITUTE

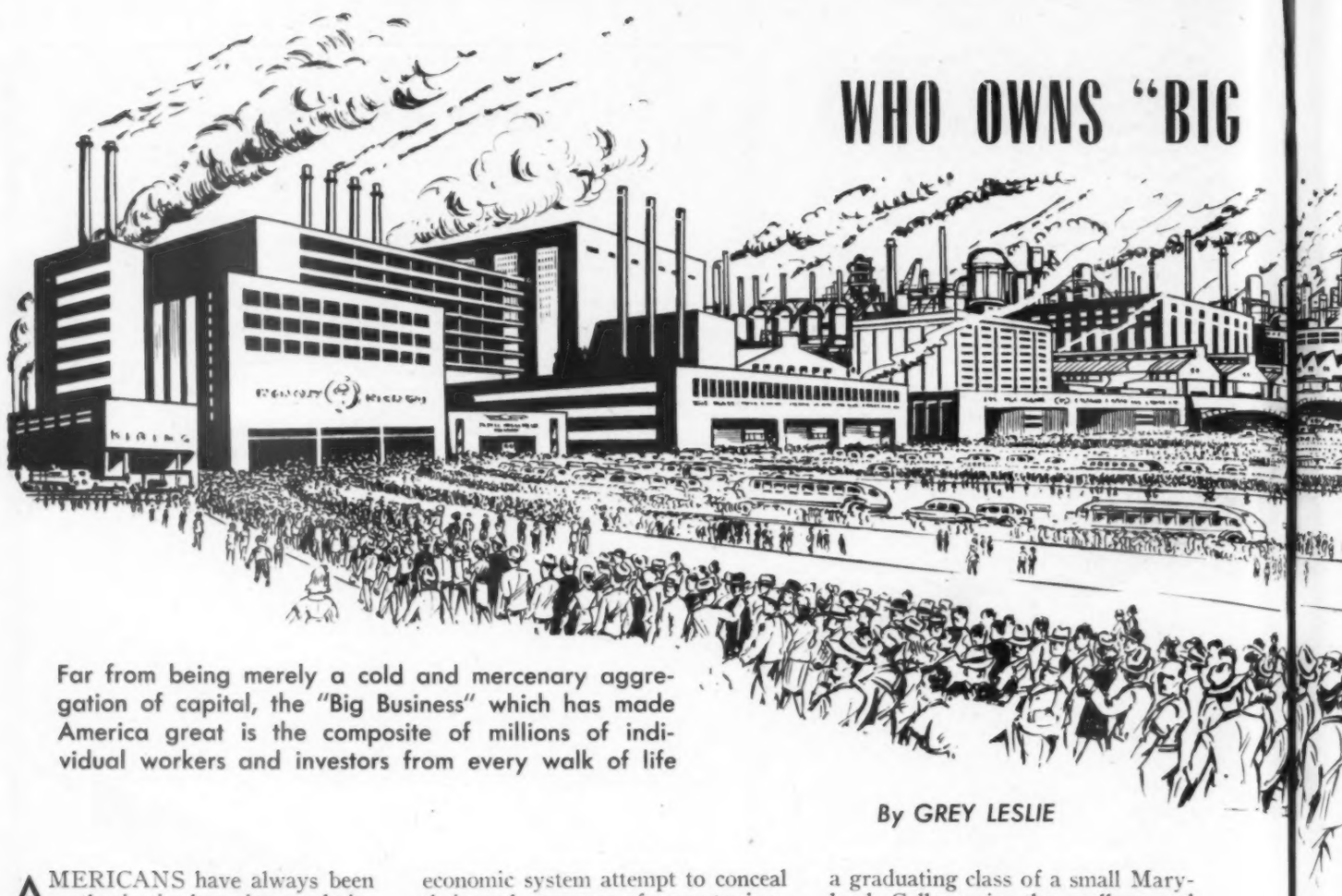
REMARKS

DATE	VENDOR	PURCHASE ORDER NO.	PRICE	UNIT	DISCOUNT	TERMS	QUANTITY

(OVER)

PURCHASE RECORD

WHO OWNS "BIG



Far from being merely a cold and mercenary aggregation of capital, the "Big Business" which has made America great is the composite of millions of individual workers and investors from every walk of life

By GREY LESLIE

AMERICANS have always been enthusiastic champions and vigorous supporters of the little fellow against the big bully. We always cheer and encourage the Davids against the Goliaths. We derive keen satisfaction in the defeat of the braggart, who flaunts his mere bigness, against the solid worth and honest strength of the little man. It is a wholesome and typically American characteristic.

It is this admirable instinct that has been perverted in the fleeting attacks on "big business" and large corporate interests. In these attacks, subtle antagonists of the American economic system attempt to conceal their real purposes of opportunism, suspicion and disunity. Unscrupulous propagandists of totalitarian ideologies never overlook an opportunity to foster animosities to create class distinctions, using any means at hand for their sinister purposes.

For example, President Truman recently delivered a speech in the cozy and intimate environment of a small college town. That speech has been deliberately distorted to imply a confirmed antipathy on the part of the Chief Executive of the Nation toward all "big business". The president's parochial address to a graduating class of a small Maryland College, in the mellow and quiet surroundings of a small community, doubtless was inspired by a temporary relief from the stress and tensions of our fast moving age. It was given in a perfectly understandable moment of nostalgia for the simplicity and slower pace of other days. Among those of us who are caught by necessity in the whirligig of sprawling urban life, there are few who could resist the urge to dwell on the wholesomeness of the simpler life, calmer pace of of the small community, the intimacies and friendships and the spirit of neighborliness so distressingly absent in the cliff-dwelling existence of overcrowded cities.

The calculated parapharasing of the President's text is a fair sample of grotesque misapplication, which the "big business" baiters have made convenient to their purpose.

TABLE I

UNITED STATES STEEL CORPORATION

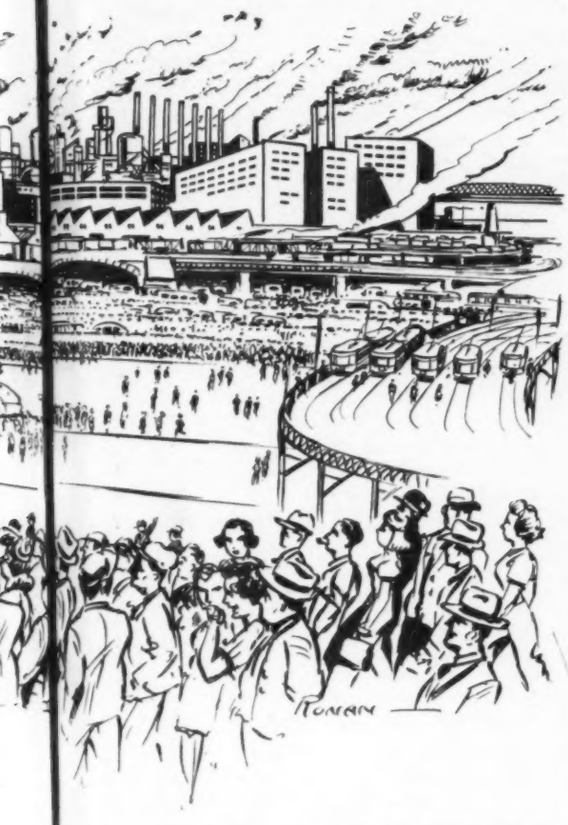
(Figures from 1945 Financial Statement)

Shareholders by Classes	Number of Shareholders	Number of Shares	Aver. No. of Shares
Individuals — women	99,803	3,407,453	34.1
Individuals — men	92,443	3,672,543	39.7
Individuals — joint accounts	15,795	470,790	29.8
Charitable institutions, educational, etc.	1,371	151,535	110.5
Insurance companies	177	367,338	2,075.4
Other companies	1,788	402,153	224.9
Fiduciaries	12,800	902,918	70.5
Brokers and others	1,645	2,913,333	1,771.0
TOTAL	225,822	12,306,063	54.5

Class Prejudices

The habit of thinking of "big business" as impersonal aggregations of capital, engrossed in the complex affairs of their particular operations, is harmless enough in itself. At the hands of political opportunists and inveterate opponents of the American democratic system, it can be and has been

BUSINESS"?



exploited as a fertile field for the rank seeds of discord and division; an insidious attempt to establish "classes" and "class thinking".

It is amazing to see how easily the demagogue and his colleagues can furbish the old-fashioned implements of their trade; with what facility they can develop a cliché to proseletize the unwary and unthinking.

Millions of normally intelligent people have been led to believe that "big business", and large corporations generally, are incorrigibly wicked and vicious combinations of money and power, crushing or devouring small business in their octupus grip, enslaving workers, brazenly profiteering and growing more and more rich, arrogant and power-mad. Investors in corporations and "big business" do not escape the calumny of opportunists who pose as crusaders of the virtuous little versus the unworthy big. They too are given a "class" label. They are pointed at as callous, calculating, tax-evading, fabulously rich nabobs, hoarding dividends that have been sweated out of labor by the lowest permissible wages, and squeezed out of consumers by monopoly and

TABLE II

EMPLOYEES, SHAREHOLDERS, AND TOTAL ASSETS OF 72 LARGE INDUSTRIAL COMPANIES IN 1945

	Number of Employees	Number of Shareholders	Total Assets in Millions
Allis-Chalmers Mfg. Co.	28,515	24,234	$180
American Can Co.	24,500	33,884	232
American Cyanamid Co.	14,500	34,100	145
American Locomotive Co.	17,251	24,173	128
Amer. Radiator & St.San.Corp.	14,400	56,947	127
Amer. Rolling Mill Co.	24,569	49,939	207
Amer. Smelting & Ref. Co.	28,366	29,619	200
American Tobacco Co.	10,835	74,338	484
American Viscose Corp.	20,233	16,118	140
American Woolen Co.	21,000	18,946	104
Anaconda Copper Mining Co.	46,404	120,545	616
Armour & Co.	60,000	45,000	332
Atlantic Refining Co.	13,282	30,237	272
Bendix Aviation Corp.	22,287	25,601	172
Bethlehem Steel Corp.	202,095	78,854	881
Borden Company	28,484	49,278	180
Celanese Corp. of America	17,716	23,497	137
Chrysler Corporation	63,297	53,679	414
Continental Can Co.	24,405	34,306	178
Continental Oil Co.	6,613	27,498	173
Corn Products Refining Co.	5,000	25,127	119
Crown Zellerbach Corp.	9,160	19,038	106
Deere & Company	16,750	15,640	195
Douglas Aircraft Co.	27,000	8,763	141
Dow Chemical Co.	10,397	12,622	146
E.I. duPont de Nemours & Co.	67,461	87,936	1,205
Eastman Kodak Co.	42,800	42,090	307
General Electric Co.	148,233	243,333	858
General Foods Corp.	13,000	68,000	163
General Motors Corp.	345,940	425,657	1,814
B. F. Goodrich Co.	42,233	23,652	183
Goodyear Tire & Rubber Co.	100,000	54,701	280
Gulf Oil Co.	33,881	18,833	653
Inland Steel Co.	19,336	9,400	182
Inter. Business Mach. Corp.	11,751	19,235	134
Inter. Harvester Co.	69,361	39,000	559
International Paper Co.	23,414	20,831	252
Jones & Laughlin Steel Corp.	37,626	23,535	276
Kennecott Copper Corp.	21,300	89,380	465
Phillip Morris & Co. Ltd.	4,200	5,800	107
Natl. Dairy Products Corp.	37,933	67,347	214
Natl. Distillers Prod. Corp.	6,500	21,710	135
National Lead Co.	9,500	18,501	129
Ohio Oil Co.	5,547	33,006	132
Owens-Illinois Glass Co.	18,324	12,437	123
Packard Motor Car Co.	10,844	112,845	109
Pittsburgh Plate Glass Co.	19,021	8,971	154
Pure Oil Company	10,562	41,011	211
Radio Corporation of Amer.	32,985	218,873	160
Republic Steel Corp.	56,624	59,953	398
R. J. Reynolds Tobacco Co.	15,000	67,500	315
Schenley Distillers Corp.	12,000	6,000	187
Shell Union Oil Corp.	27,696	15,750	427
Sinclair Oil Corp.	17,760	95,793	456
Socony-Vacuum Oil Co.	39,445	130,130	1,076
Sperry Corporation	16,000	28,270	104
Standard Brands, Inc.	12,844	89,700	118
Standard Oil Co. of Calif.	25,000	87,260	738
Standard Oil Co. (Indiana)	36,332	97,166	946
Standard Oil Co. (N. J.)	108,000	160,025	2,532
Standard Oil Co. (Ohio)	7,227	10,733	142
Sun Oil Co.	32,680	10,474	194
Swift & Co.	65,000	62,000	353
Texas Company	32,641	93,337	834
Tide Water Associated Oil Co.	10,116	29,880	233
Union Oil Co. of Calif.	8,679	36,342	229
United Aircraft Corp.	20,000	39,813	179
United States Rubber Co.	70,739	23,322	226
United States Steel Corp.	279,274	225,822	1,891
Westinghouse Electric Corp.	103,333	56,666	450
Wheeling Steel Corp.	18,326	7,410	133
Youngstown Sheet & Tube Co.	21,922	11,392	231
Total 72 Companies	2,925,449	4,082,805	$27,206

TABLE III

Employees and Shareholders of Railroad and Public Utility Companies Having Total Assets Over $1 Billion in 1945

	Number of Employees	Number of Shareholders	Total Assets in Millions
American Tel. & Tel. System...	474,500	683,897	$6,766
Atchison, Topeka & Santa Fe Ry. Co.	70,911	61,219	1,247
Baltimore & Ohio Railroad Co...	64,285	25,067	1,167
Consolidated Edison Co. of N. Y.	25,967	152,888	1,324
New York Central Railroad Co.	124,462	59,926	1,735
Pennsylvania Railroad Co.....	161,436	214,995	2,224
Southern Pacific Company.....	92,458	43,482	1,686
Union Pacific Railroad Co.....	60,414	56,691	1,287
TOTAL, 8 Companies	1,074,433	1,298,165	$17,436

exorbitant prices.

To those who will charge that this picture is overdrawn, let them witness the almost demoniacal glee with which millions of Americans seem to contemplate the verbal bludgeoning of "big business", and the political castigation of large corporate interests. Let them listen to the clamor of approbation at the petulant chattering of some incompetents, who have either never been in business, or failed in it, because of their own stark inefficiency. Let them hear the chuckles at reports of the impoverishment of some once-wealthy investors or the dissipation of certain American fortunes.

The occasional dereliction of an executive, or a group of officials of a large corporation, is distorted and maximized as typifying all "big business"—a warning of the malevolence of which it is capable. It is the old trick of generalizing from the particular, but it usually works with astounding success under the skilled manipulation of trained enemies of the capitalistic system.

We Need Big Business

This hostile attitude toward "big business" is cultivated by the proponents of discord and suspicion without abatement. It is incessantly promoted, because no time can be permitted to listeners to examine how deeply the so-called "little people" are involved in the fate of "big business" and large enterprises in America. Sound thinking and cool analysis are anathema to the demagogue. They would expose the fallacies of his theories, and reveal his real purposes.

The undeniable truth is that America has attained, and can only maintain, its pre-eminent power and position in the world, through the steady growth of its "big business".

In spite of any sentimental attachment we may have to small business, we need to reflect frequently on the fact that without "big business" great masses of our people could never have been supplied with automobiles, refrigerators, household labor-saving appliances, radios, and innumerable other articles. Without mass production, these things could never have been produced and be within range of the average purse. We could never have attained the highest standard of living the world has known without mass production We could never have mobilized the vast resources of the nation, in time nor in sufficient volume, to justify our welcome and earned designation as the "Arsenal of Democracy". We could never have provided this Nation and its Allies with the sinews of war to meet the mortal challenge to their very existence.

It becomes necessary, from time to time, to back away from the din created by noisy agitators and propagandists; to calmly examine the structure of American Industry —what made it great and what made "Big Business" big.

Who Owns Big Business?

There is too little general realization of the broad base of investors, in all walks of life, who have put their savings into the large corporations of America. *These investors are the real owners of "big business"*. It is not extravagant to say that at least half of the population of the United States participates, either directly or indirectly, in such ownership. This is true, not only because millions of people have their savings directly invested in corporation shares, but also because thousands of institutions have invested some of the savings entrusted to them by individuals, in corporate securities. Hospitals and charitable agencies, churches and seminaries, schools and colleges, insurance companies and banks, are all direct or indirect owners of Big Business. These owners represent a cross-section of America; they are to be found in every part of the country, on farms, and in every town and city. In my own immediate neighborhood I find that my grocer, my doctor, my dentist, a retired school teacher friend, my attorney, my neighbors in the apartment house in which I live, are all stockholders in one or more large corporations.

Let us examine the classes of shareholders in one of the country's largest corporations, as reported in its 1945 financial statement and shown in Table I. And let us examine Table II showing the number of stockholders in a representative group of large corporations. (The figures are taken from Moody's Investment Manual and are reproduced by kind permission of that agency.)

There is a similarly wide distribution of ownership among the more important railroad and public utility systems, as illustrated by Table III, showing eight of the largest. This group last year had a total of 1,074,000 employees, who operated facilities owned by 1,298,000 shareholders, representing an average investment of $16,200 per employee. Wage and salary payments totaling $2,864 million were nine times the dividend payments, which totaled $307 million.

Enterprise and Growth

American business, large and small, is not a static, but a constantly changing group. New enterprises are always crowding in and pushing ahead to eventually join the ranks of "big business".

The history of the great American industries of to-day, is the history of concerns that have grown from small beginnings. It is the story of Edison, Carnegie, Ford and countless others.

We need to reflect on these things to counteract propaganda aimed at our disunity. We cannot forget that it is the essential democracy of our business system that makes success stories like these traditional; makes us proud of America and explains our pre-eminence as an industrial nation. The spirit of enterprise is seriously dampened by damning those concerns that have grown large.

The moral is that any concept of "small versus big business" is a false issue; America needs both, and both belong to all of us.

Pages From a Buyer's Notebook



BUYER'S PROSPECT FILE

Whenever I run across an advertisement or announcement of some new product that might be interesting to our company at some future time, even if we aren't in the market now, I tear it out and tuck it into a file in the bottom drawer of my desk. If and when that requirement does arise, I'm days or weeks ahead in locating a source of supply.

For example, in the early days of the war, the question of identification badges came up. We had never used such a system, but I had noted the trend and collected considerable literature on the various types available. When the general manager decided we ought to have badges and came in to talk it over, I was able to lay before him seven different systems. It was a brand new item in our purchase list, but we were able to make a selection and place the order within thirty minutes.

I know how easy it is to accumulate a lot of junk on the theory that "it might come in handy some time", and I wouldn't clutter up the general file with this sort of information. But this is for my personal convenience. By knowing what is going on in the company and in business generally, and using a little common sense in selection, it can be kept within reasonable volume. And if I have occasion to use only 10% of it, it's well worth while.

Every salesman keeps a prospect file of potential customers. Why shouldn't I keep a prospect file of potential sources of supply?

SKILLED PERSONNEL

The Navy's report on its wartime procurement experience says:

"In one way, buying is like surgery. The best possible surgical books and equipment may be available, but when operations are necessary, nothing counts but the doctor's skill as a surgeon. So it is in buying. All the rules in all the manuals are useless unless a skilful buyer puts them into effect. Sound business judgment, adroitness in appraising the contractor's desire for the award, trading ability —such traits as these are essential to good buying.

"A skilled buyer will be handicapped by a poor organization, but the best organization will fail without able buyers.

"The need for able men is continuous. A competent contract negotiator or buyer, in a single deal, may save more than his annual salary. Where civilian personnel is required, it would be penny wise and pound foolish to drive away good men by a short-sighted salary policy. Where officer personnel is needed, the Navy must offer the rank appropriate to the duties and responsibilities involved, and the requisite opportunity for promotion.

"In buying, skilled men are cheapest."

THE EXPENSE ACCOUNT

In making up my request for a departmental appropriation for next year, I'm including a liberal amount for buyers' expense accounts.

No, I haven't fallen for the wheeze about purchasing agents taking the salesmen out to lunch and ball games in these cock-eyed times, though I do insist that we shouldn't put ourselves under obligations to the fellows who call on us, and I don't want my men to be fumblers when the check comes around. The luncheon table is a good place to cement business friendships, when it's a two-way proposition and kept on a friendly basis.

But even more important, I want my men to feel free to hop a train and visit a supplier's plant—or one of our own plants—whenever it will serve any useful purpose in the better handling of a procurement job. A lot of things can be accomplished by conversation and first-hand observation that would never be satisfactorily decided by correspondence at long range. A lot of time can be saved and a lot of expensive mistakes avoided. These are legitimate costs of purchasing, and they ought to be provided for without argument and without embarrassment. Naturally, we'll expect an accounting for expenses, and we'll expect results.

Most companies subscribe to the policy of "spending money to make money". Spending money to save money is just as necessary and just as important. A buyer's expense account, judiciously used, is one of the answers.

CASH DISCOUNTS

The old argument about cash discounts has been revived. What does the saving on 2% 10 days—30 days net really amount to?

Most of us agree that 2% discount for 20 days anticipation of the net due date is the same as 3% a month, or 36% a year on the working capital involved.

Now the accountants claim that the net saving ought to be figured against net cost, after the discount has been deducted. For example, on a $1,000 purchase, you save $20 for 20 days, or at the rate of $365 a year. When that is set over against the actual expenditure of $980, it comes out exactly 37¼%. They cite the National Industrial Conference Board in support of this calculation.

Perhaps the complete answer would be that the seller concedes 36% for the prompt assurance and use of working capital, while the buyer benefits at the rate of 37¼%.

In either case, it's rather a handsome return for the relatively simple purchasing responsibility of seeing to it that the applicable cash discounts are included in the terms of a purchase agreement, that vendors' invoices are promptly received and immediately processed and verified for payment, and that discount privileges are not waived in the event of tardy invoices or pending necessary adjustments. It pays to sort invoices on arrival and to flag those that bear discounts for special attention in both purchasing and accounting sections.



U. S. Treasury Procurement Division handles storage and issue of sixteen-million-dollar peacetime supply program through regional warehouse and distribution centers located in twelve key cities. System is available to all governmental agencies that wish to use it, on a voluntary basis.

By S. A. SNYDER

Deputy Director, Stores Branch
Procurement Division
U. S. Treasury Department

NATION-WIDE STORES SYSTEM

LIKE any commercial firm, the United States Government requires pens, pencils, paper, desks and a multitude of other items to keep its offices functioning. To see that it gets these supplies as quickly and efficiently as possible, the Procurement Division of the Treasury Department maintains a system of stores or warehouses in twelve strategic cities throughout the country.

This, however, was not always the case. In 1942 the Procurement Division had only one warehouse located in Washington, D. C. Throughout the United States, many other Federal agencies operated 405 different warehouses engaged in various phases of storage and issue. Many of these, too, were located in the District of Columbia and even more looked to the Procurement Division's warehouse for their stock replenishment. As can be readily seen, this meant duplication of effort and inevitable waste of money.

To solve the problem, President Roosevelt on August 31, 1942, issued Executive Order 9235. This order provides that the Procurement Division "shall undertake such warehousing, rehabilitation and distribution of supplies and equipment for Government agencies, and in connection therewith, shall take over such Government warehouses, appurtenant facilities and personnel . . . as the Director of the Bureau of the Budget shall approve."

That was the basis upon which the Division's present Stores Distribution Branch was established.

From the beginning the goal set was "to serve the user with merchandise of proper quality in the required quantity more quickly and at less cost than agency self service through its own facilities." To accomplish that objective and to fulfill the provisions of President Roosevelt's Executive Order, careful study was necessary.

Regional Organization

The first step was to consolidate wherever possible the various warehouses operated by other Federal agencies. At first glance it might appear that the Procurement Division should have started out by consolidating the warehouses in Washington. That, of course was the place of the greatest concentration. Upon analysis, however, this rather paradoxical situation became evident. Although substantially all warehouses giving national distribution were located in the District, 88% of Government employees were in the field. From the nation's capital, which is *not* a commercial center, supplies and equipment were being channeled out to field offices which in many cases *were* near manufacturing areas. Another point to be considered was this. To immediately change the nation-wide distribution, then being handled in Washington, would have upset the whole Federal supply system at one time. It seemed wiser, therefore, to tackle the problem in segments—that is, on a regional basis—which restricted unavoidable disturbances to one area at a time.

The Procurement Division, in other words, decided to make Mohammed go to the mountain. Its first supply center was established in San Francisco, the farthest from

the seat of government. In the area to be serviced, several warehouses then being operated by other Federal agencies were taken over, adequate space was found to house the consolidated operation in San Francisco—and today the San Francisco Supply Center, and a sub-warehouse at Los Angeles, issue supplies to Federal agencies principally in California, Nevada, Arizona and western Utah.

After the San Francisco center had been running for two or three months, the Division set up a warehouse in Fort Worth, Texas. From Fort Worth it went to New York City, Kansas City, Denver, Atlanta, Boston, Chicago, and Seattle. The last warehouse was established in Cleveland on March 10, 1945. In each of these areas other civil agency warehouses were consolidated.

Service Considerations

In selecting cities for the location of its warehouses, the Procurement Division endeavored to place them in the centers of Federal employee concentration. That is, a warehouse was located as near as possible to its customers, thus avoiding long freight hauls between the two. This is the explanation of the peculiarly shaped service areas shown in the map. Service boundaries were not predicated upon a number of conflicting considerations, but upon customer concentrations alone. For example, Federal agencies in the awkwardly shaped area serviced by the Denver warehouse (see map) receive their supplies more quickly and cheaply from it than from any other warehouse in adjacent service areas. On the theory that the customer is always right, however, the Procurement Division does not always question a Federal agency if it sends its order to another warehouse. It simply fills the order as quickly as possible. But if the customer continues to do this, he is asked why he does not patronize the warehouse in his area. If his answer is unsatisfactory service, immediate steps are taken to rectify the matter.

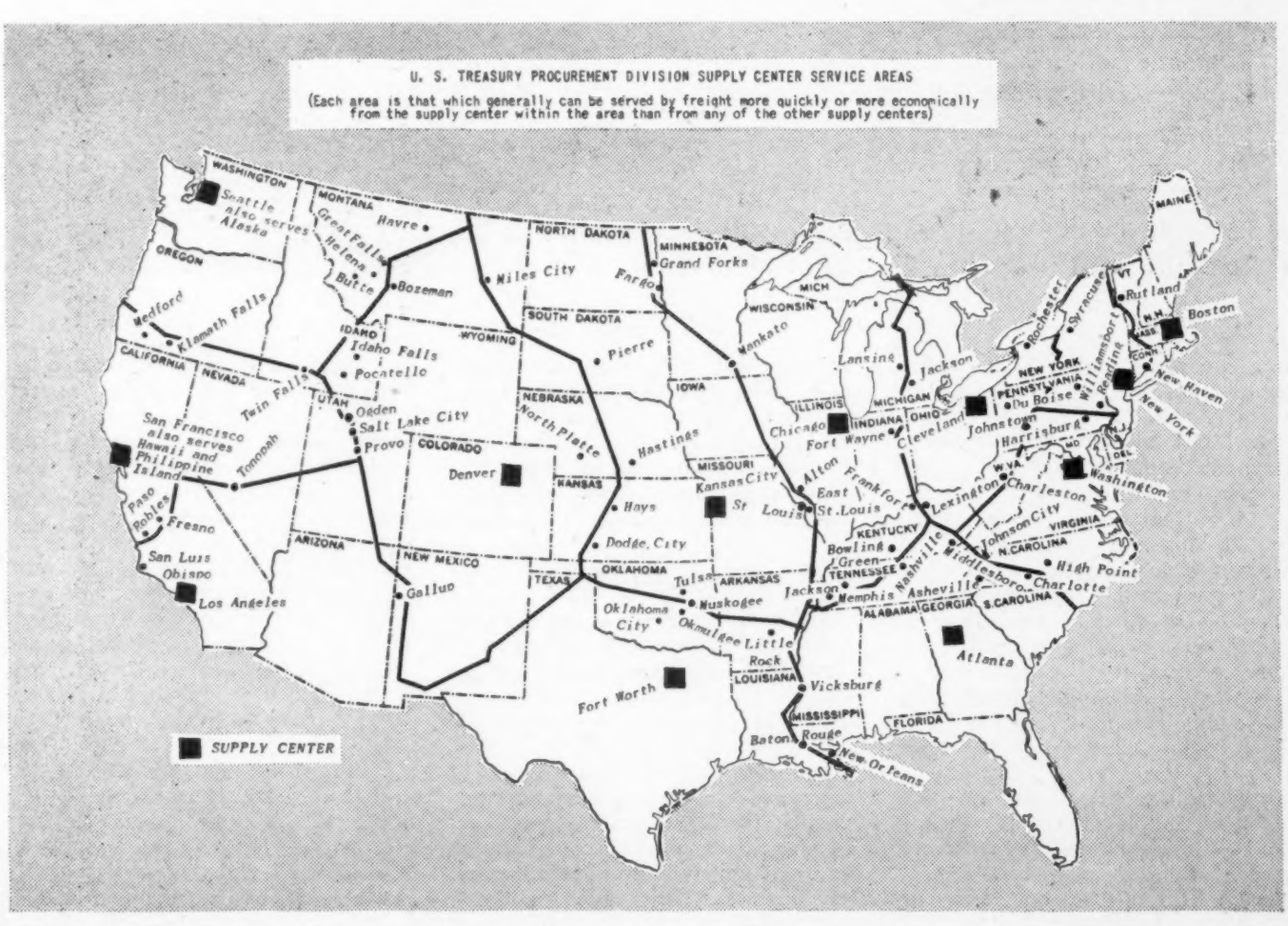
A novel departure from the conventional pattern of Government service is that agency use of Procurement's stores is voluntary. Illustrative of the way they do use it, however, is the fact that during the fiscal year 1946 stock was issued with a money value of almost sixteen million dollars. And this was during the first year of peacetime operations when agency over-all requirements would naturally be less.

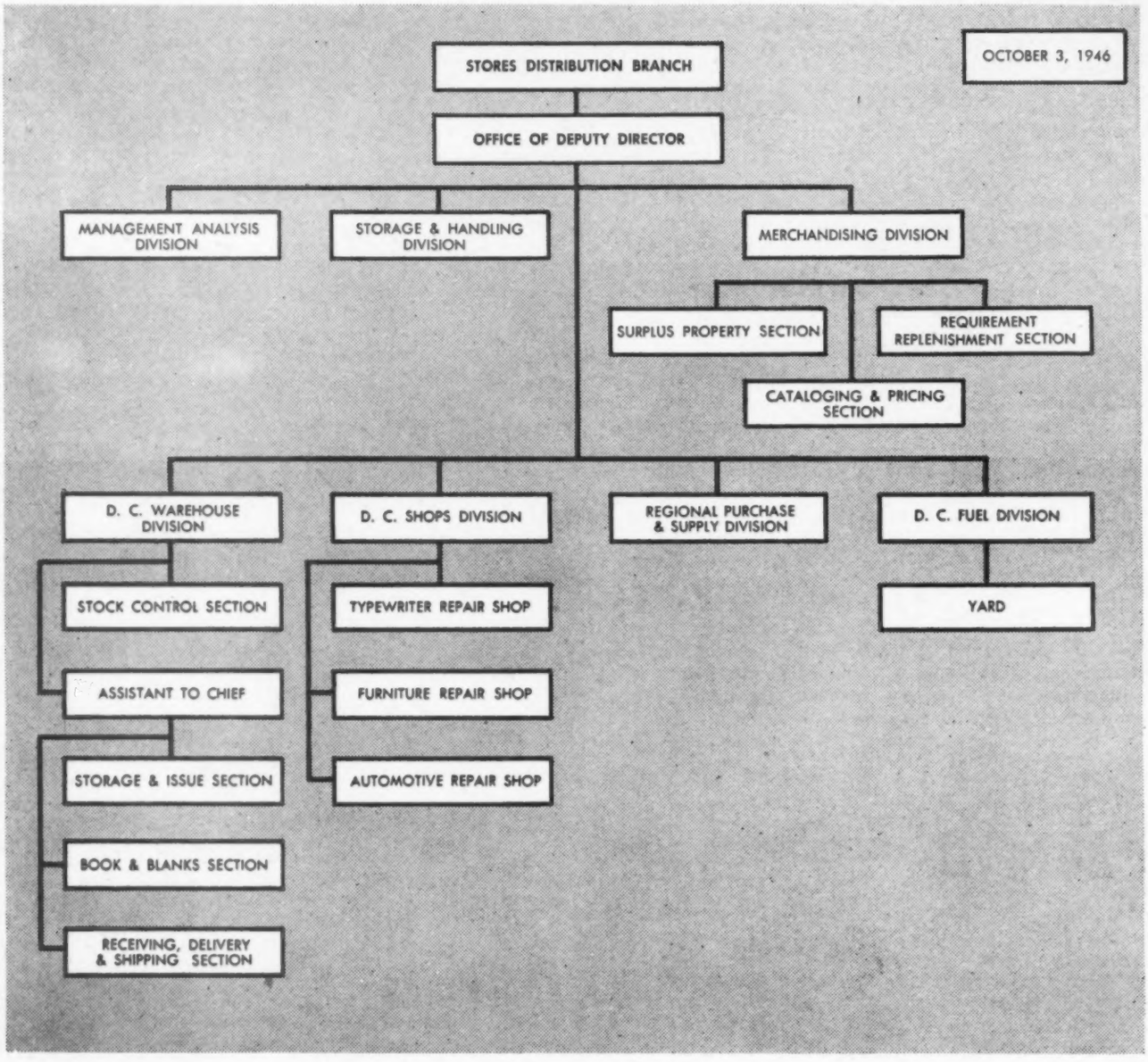
The fact that agency use is voluntary makes the supply centers operate very much on the order of a commercial system of chain stores. It provides an automatic incentive for efficiency through competition and survival. A satisfied voluntary customer spells the best and the most lasting goodwill.

Unlike a commercial store, though, the Procurement Division does not attempt to make a profit on the stock it issues. Goods are sold at the cost of acquisition, plus a mark-up which represents only the cost of handling.

Field Representatives

A new feature of these supply establishments is their traveling representatives. Although supply centers do not have a full-time employee who performs service extension work exclusively, each appoints someone to canvass its service area periodically coincidental with his other duties. The men chosen for





this job must know the Procurement Division's supply operations from "A" to "Z". But their job is not high pressure salesmanship. Each man must be ready and willing to assist Federal agencies in the solution of their supply problems even though this may not relate to the Division's own supply operations.

As soon as the Procurement Division finds that a new Federal agency is moving into one of its service territories, a man is sent to help them in obtaining the supplies and equipment needed to set up an office. Those who have been associated with the establishment of new government organizations know that obtaining supplies is not first on the list of "things-to-do". Too many other matters are of greater importance. As a rule, no one thinks of supplies and equipment until somebody suddenly says, "I need a desk, a typewriter, paper, pencils, etc." By anticipating this situation, the Procurement Division may solve the dilemma before it occurs and thus fulfill its function as a service agency.

Management Policies

Like any progressive department store, the Procurement Division is concerned with management analysis, storage and handling, merchandising and stock control. Over-all policies on these matters are established in the Washington office.

Under the Stores Distribution Branch, the Merchandising Division develops and constantly strives to improve and simplify the stock control system. It determines the items to be carried in stock and those to be deleted. Deletions, of course, are readily indicated by control records and by sales analysis. This division also establishes pricing formulae and criteria for replenishments. It earmarks slow moving and excess stocks so that the items can either be dropped or transferred to another warehouse for issue. For example, the Fort Worth warehouse may be over-stocked with paper clips and unable to sell them. But if paper clips are in demand in Kansas City, they can be transferred from Fort Worth to the Kansas City warehouse and sold there. In such a case the Fort Worth warehouse would ship the material at cost price or less and pay freight to Kansas City. This is not a penalty but a potent weapon to inspire bet-

ter replenishment and service extension work. These inter-warehouse transfers are authorized by the Merchandising Division.

Another merchandising job is publishing the Stock Catalog which shows Federal agencies what is carried in Procurement stock and from which warehouse an item should be purchased. Since the Procurement Division is the claimant for Federal agencies for surplus supplies of the type carried in warehouse stock, its merchandising staff also compiles estimates of Federal requirements for surplus property. This is obtained from the War Assets Administration and issued through the supply centers like regularly purchased warehouse supplies.

Setting Up Procedures

Initiating new and revising existing stores operating procedures is the job of the Management Analysis Division. It also installs these procedures, for the man who writes a procedure should be the one to install it and make it work. This Division also develops standards of performance — for example, the number of items a selector should pick in a day, how much poundage a packer can handle, etc. By establishing such standards to measure the performance of each individual worker, the best and most economical operation can be determined. Statistical analyses, made by this Division, are the basis on which it recommends continuance or closing of a facility, or changes in its operations, such as in its mark-up and service charges.

It is this office, too, which makes the surveys of civil agency warehouses scheduled for consolidation into the Procurement Division's supply system.

The job of the Storage and Handling Division is to appraise storage space for suitability and adequacy; to decide upon arrangement and methods of storage; to determine the flow of merchandise so that no conflicts will arise; to determine equipment needs; and to develop the best methods for packing, crating and carloading. It is also responsible for security measures against fire and theft. To see that the individual worker is capable of carrying through the methods decided upon, the Chief of this Division must develop employee training programs on stock picking, packing and crating, movement of merchandise, and various other material handling jobs done in the supply centers.

Besides these policy-making Divisions, the Washington office of the Stores Distribution Branch also has various "line" or operating groups. Chief among these is the D. C. Warehouse Division. This was founded on the nucleus of the old Washington warehouse, which was the only one operated by the Procurement Division in 1942. It is now one of the Supply Centers in the national system. It is, in fact, the largest unit in the system. The primary function of this warehouse (as of those in the field) is to receive, store, and issue merchandise. It carries an inventory of approximately $1,750,000. Annual issues are around $6,000,000—or almost a four time turnover.

Another "line" group under the Stores Distibution Branch is the D. C. Fuel Division. Through its fuel yards, it receives, stores and distributes coal, wood, fuel, and charcoal to buildings operated by the Federal and District Governments in the Washington, D. C., vicinity. To illustrate the extent of this operation, coal deliveries amount to almost 500,000 tons a year and fuel oil deliveries, to over 19,000,000 gallons. In all, fuel is delivered to almost 1500 different points.

The dependence of Federal agencies upon this service was clearly shown last winter when a letter was received from the Public Buildings Administration. It stated that the reserve coal supply at the Central Heating Plant was down to a six-day supply. If more coal was not delivered in that time, the whole triangle group of Government buildings would go unheated. Immediately the Procurement Division hired all the contactors' trucks it could find in Washington and hauled coal day and night to bring the reserve up to a safe level.

Emergency Services

To be prepared for similar emergencies (caused by dislocation of sources of supply, transportation difficulties, etc.) the Division set up a 100,000 ton reserve coal pile. This proved a wise precaution during the nationwide coal and railroad strikes, and kept Government agencies adequately heated until the emergency was over.

Also for the use of agencies in the District of Columbia, the D. C. Shops Division operates typewriter, automotive and furniture repair shops. The first overhauls approximately 3,000 typewriters a year while its itinerant repairmen make about 26,000 "on the spot" repairs and adjustments. The automotive repair shop gives mechanical and body repair service to approximately 1,000 Government-owned vehicles. Annual production of the furniture shop is 24,000 pieces.

The District fuel yard and repair shops are auxiliary services performed by the Stores Distribution Branch. Its primary function is nationwide supply to the Federal Government.

Although the system was designed to stock the supplies most commonly used by Federal agencies, the individual warehouses frequently store special items needed by the agencies in their area. For example, take the case of the San Francisco supply center. To help fight forest fires, most likely to occur in the western states between May and October, it is providing day and night service to the U. S. Forest Service. On Saturdays, Sundays, holidays, day or night, officials of the U. S. Forest Service have the home office telephone numbers of key people in the Procurement Division's San Francisco office always "on tap" and are liable to call them on a moment's notice. If this happens after office hours, an emergency crew is called to the warehouse to pack and ship food, fire axes, additional hose, sand bags and other fire fighting equipment.

Several months ago when a raging fire broke out in the Plumas National Forest, fifteen hundred fire fighters had to be sent food and equipment immediately. Typical of messages which may reach the San Francisco office at any hour during the forest fire season is the following telegram:

> *"Ship by fast truck line twenty-five cases ten-in-one rations. Ten cases each of K rations, ham, bacon, butter, pork beans, cheese, luncheon meats, shortening, tomato juice, peaches, apricots, corn, coffee, corned beef, canned, to Forest Supervisor, Coconino National Forest Service, Flagstaff, Arizona. . ."*

Needless to say, the fire fighters in the Coconino National Forest got their supplies—and fast!

This is illustrative of the job which must be performed for Fedeal agencies by the Stores Distribution Branch. By personal dealings, by careful analysis of their needs, it ascertains what their special and normal requirements may be. Then these supplies are kept constantly on hand in the warehouse which, because of location, can give the promptest and cheapest service.



SUBSTITUTIONS and ALTERNATES for

Fabricating methods, heat treating, and physical requirements of finished parts determine practicability of substitution

Authority to substitute must be closely controlled, with engineering approval

Acceptable alternatives for specified materials should be determined before the need arises, and indicated on the shop instructions and material control records for each part number in order of their preference

By BENJAMIN MELNITSKY

WHEREVER bar stock is used there is always the question of whether or not substitutions in size, finish, grade, and type can and should be made. Another important question relates to the use of alternate metals. Individual plants have their own methods of approaching this problem; generally speaking these different approaches fall into three broad groups.

First Approach—Company A

The first approach to this problem is illustrated with an example of how one company (Company A) handled the question of substitutions and alternates. A large quantity of 2" diameter C-1020 Cold Drawn was needed for a rush order of several hundred pistons. The size was not in stock; the earliest promised delivery date was several weeks hence. Because of a highly inflexible policy that did not permit substitutions in finish or quality of bar stock, and because there were no provisions made for the use of alternate steels, this plant was forced to use the closest size in C-1020 Cold Drawn which was 2½" diameter. There were several safe substitutions that could have been made and several acceptable alternate steels in stock, but company policy did not allow for their use. Because of this narrow policy, metal was used wastefully and expensive man- and machine-hours were unnecessarily expended. The cold finish of the bar was wasted and for every foot of stock used, 5.99 extra pounds ended in the chip pan. The parts were made on time and all parts were satisfactory; however, the cost was prohibitively great.

Second Approach—Company B

The second group, typified by Company B, had a similar problem. They needed 2" diameter C-1020 Cold Drawn for a large order of thrust washers that were to be case-hardened. The same shortage was present here as well. However, in this plant there was too great an

amount of flexibility in the use of substitutions and alternates. So, from among many possible sizes, finishes, and types of steel that were available, 2" diameter B-1112 Cold Drawn was selected since it was closest in size and finish to the C-1020 that was specified for the part. The thrust washers were made from B-1112 . . . every single one was scrapped. Some of the faulty parts were discovered in inspection and immediately condemned. Other parts got into finished stores where they were mixed in with pieces made previously from C-1020. All thrust washers had to be pulled from stores and after much time was wasted on chemical tests, the parts made from B-1112 were segregated and scrapped. A few of the parts got into finished units. After a great deal of paper-work checking and much time-consuming effort, the faulty parts were pulled out of the finished units. The results of the substitution were disastrous in this case. The bar stock that was used was wasted, and the required parts were still as far from being made as ever.

BAR STOCK

The last of this trio is typified by Company C which made the same substitution as did Company B. However, Company C did so with no trouble at all. Here 2" diameter C-1020 Cold Drawn was needed for a large order of levers. 2" diameter B-1112 Cold Drawn was substituted successfully and the levers were made at estimated cost and not a single one was scrapped due to material failure.

Third Approach—Company C

This last company made the substitution successfully because it knew ahead of time that B-1112 was a satisfactory alternate for C-1020 *only* for parts that were not to be heat treated. This company was fully aware of the values derived from planned substitutions, just as it was cognizant of the dangers of indiscriminate substitutions and haphazard choices of alternate metals. Company B, on the other hand, although it realized the value of substitutions and the use of alternates,

STANDARD PRACTICE SHEET NO. _____ BLANK MANUFACTURING CO.

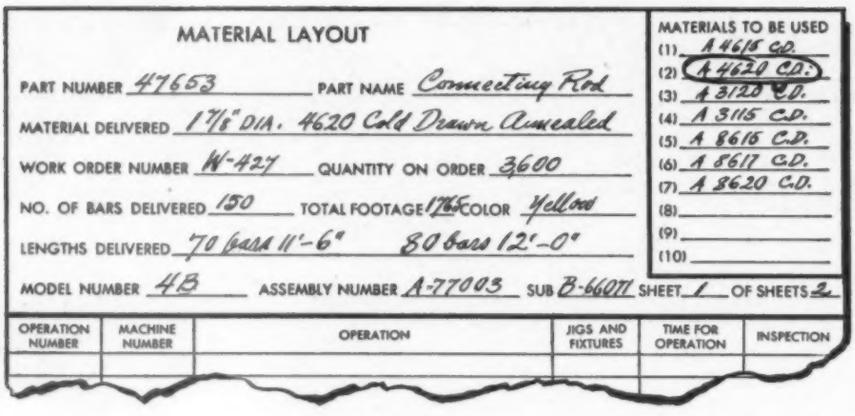
SUBJECT MATTER _____ SUBSTITUTION OF BAR STOCK _____

EFFECTIVE _____ ISSUED BY _____ APPROVED _____

1
2
3
4
5
6
7

STANDARD PRACTICE REGULATIONS

1. The latest AISI-SAE specifications shall be considered as standard for bar stock used in this company. Substitution of one grade and type of bar stock for another is permitted only under the following conditions:
   a. If the alternate steel is listed on the method sheet as being an acceptable substitute.
   b. Alternate metals are selected in accordance with the order of preference as shown on the method sheets.
   c. Alternate metals, other than those listed on the method sheet may be used only upon receipt of written approval from the engineering department.
2. Other substitutions as listed below are permitted only if alternate metals listed on the method sheets are not available for immediate use. If the preferred type of metal is on order and is expected in within a reasonable period of time, substitutions should be deferred. If the metal is not received when expected, and production requirements are urgent, substitutions listed below may be made.
3. For purposes of using bar stock in this company, such terms as Hot Rolled Annealed, Hot Rolled Normalized, Hot Rolled as Rolled, Natural Hot Rolled, and Hot Rolled which are used to indicate treatmenf given to bars by vendors or steel fabricators are considered as interchangeable unless specifically forbidden on the method sheets. If an order calls for Hot Rolled Annealed bar stock, any of the above-listed finishes may be substituted.
4. Bar stock purchased already Heat Treated may not be substituted for any of the finishes mentioned in paragraph 3. Heat treated stock costs more and takes longer to procure; hence, should be used only when specified on the method sheets.
5. However, when Hot Rolled Heat Treated stock is specified, Hot Rolled Annealed bar stock may be substituted if the following conditions apply:
   a. There is no heat treated stock in any approved alternate type of hot rolled steels.
   b. There is no heat treated stock either in the original stock or in alternate hot rolled heat treated stock that is more than ¼" oversize.
   c. There is no Cold Rolled Heated stock either in the originally specified stock or in alternate stock that is more than ⅛" oversize.
   d. If Hot Rolled Annealed bars are used they must be cut to five foot lengths (or nearest length that will result in as little scrap as possible) and sent to heat treat. If the parts can be heat treated after machining is completed, such treatment should be made then.
6. For purposes of using bar stock in this company, such terms as Cold Rolled, Cold Rolled Annealed, Cold Drawn, and similar terms that indicate treatment given to the surface of bars by steel fabricators are considered as interchangeable unless specifically forbidden on the method sheets. If an order calls for Cold Drawn, any of the above-listed finishes may be substituted.
7. The only exception to the above is the case of Ground and Polished bar stock. This type of steel is ordered for specific parts and may not be used as substitute for the cold finishes listed in paragraph 6.
8. When Cold Rolled Heat Treated stock is specified, any of the cold finishes listed in paragraph 6 may be substituted if the following conditions apply:
   a. There is no Cold Rolled Heat Treated stock in an approved alternate type of steel.
   b. There is no Hot Rolled Heat Treated stock either in the original stock or in an alternate stock that is no more than ¼" oversize, or less than ⅛" oversize.
   c. There is no Hot Rolled Annealed stock either in the original stock or in an alternate stock that is more than ¼" oversize and no less than ⅛" oversize.
   d. Provided that the stock can be heat treated *after* the parts are machined.



MATERIAL LAYOUT

PART NUMBER 47653 PART NAME Connecting Rod

MATERIAL DELIVERED 1 7/8" DIA. 4620 Cold Drawn Annealed

WORK ORDER NUMBER W-427 QUANTITY ON ORDER 3600

NO. OF BARS DELIVERED 150 TOTAL FOOTAGE 1765 COLOR Yellow

LENGTHS DELIVERED 70 bars 11'-6" 80 bars 12'-0"

MODEL NUMBER 4B ASSEMBLY NUMBER A-77003 SUB B-66011 SHEET 1 OF SHEETS 2

MATERIALS TO BE USED
(1) A 4615 C.D.
(2) A 4620 C.D.
(3) A 3120 C.D.
(4) A 3115 C.D.
(5) A 8615 C.D.
(6) A 8617 C.D.
(7) A 8620 C.D.
(8)
(9)
(10)

OPERATION NUMBER	MACHINE NUMBER	OPERATION	JIGS AND FIXTURES	TIME FOR OPERATION	INSPECTION

In the upper right hand box are listed all the different types of bar stock that can be used for the part described on the material layout (or process sheet, method sheet, operation layout). The preferred steel is A-4615 Cold Drawn; however, alternate steel A-4620 Cold Drawn was used. This was encircled in red so that all departments receiving the job would know what material was shipped with the order.

was not fully aware of the dangers inherent in such actions. They permitted the use of B-1112 (a steel that should not be heat treated) for a part that was to be case-hardened. The result, naturally, was failure. Company A refused to recognize the value of flexibility in using bar stock and suffered a loss of production as a result.

Flexibility in the Use of Bar Stock

As can be seen, there is a need for flexibility in the use of bar stock. No better illustration need be cited than the case of National Emergency Steels. Under the alloy-conservation program, new, untried NE steels were substituted for commonly used S.A.E. and A.I.S.I. steels in almost every plant in this country. Whether or not these alternate steels were effective is answered best by America's impressive production record during the war.

The experiences with alternate steels during the war proved that the supposed inflexibility in the use of steel and other metals is a false assumption. Sweeping substitutions were made successfully. For example, instead of the standard A.I.S.I. A-4140, the following are but some of the NE steels used: NE 8339, 8442, 8447, 8640, 8744, 9440, 9640, and 1345. The chemical compositions for all these different steels varied; yet, each served its purpose admirably. The examples of substitutions made and alternates used could be detailed at great length.

Experience with NE steels has shown that chemical compositions of bar stock should not be the sole determining factor in the choice of metal for parts. Identical or satisfactory physical results can be obtained often from many metals, all with entirely different chemical compositions.

Specifications

The experiences with NE steels are strong arguments against inflexible policies in the matter of alternate steels. The basis for another good argument lies in the very nature of specifications used for bar stock. American standards for bar stock (A.I.S.I., S.A.E., A.S.T.M., government specs, and others) provide broad ranges of chemical compositions for the different grades and types of bar stock. This is necessary because manufacture of metal can never be a precise science; there is still a great amount of "art" needed. What actually happens is that one metal specification may in some cases be the same metal as that covered by another specification number.

TABLE I

A.I.S.I. Number	Carbon Range	Manganese Range	Phosphorous	Sulphur
C 1018	0.15-0.20	0.60-0.80	0.04	0.05
C 1019	0.15-0.20	0.70-1.00	0.04	0.05
C 1020	0.18-0.23	0.30-0.50	0.04	0.05
C 1021	0.18-0.23	0.40-0.60	0.04	0.05
C 1022	0.18-0.23	0.70-1.00	0.04	0.05
C 1023	0.20-0.25	0.30-0.50	0.04	0.05
C 1025	0.22-0.28	0.30-0.50	0.04	0.05
C 1026	0.22-0.28	0.40-0.60	0.04	0.05

Note in Table I how close specification numbers overlap. As can be seen the high of one carbon or manganese range overlaps the low of another carbon or manganese range. One batch of C-1018 bar stock with a high carbon point (0.20) and a high amount of manganese (0.80) would be the same as a batch of C-1022 bar stock with low carbon and manganese points. Similarly C-1020 and C-1025 could be almost identical steels where the C-1020 is high in carbon. This is true of all grades and types of bar stock covered by standard specifications. It would seem that any company that forbid the substitution of C-1020 for C-1025, or any similar substitutions, is not being realistic. In too many plants the matter of specifications for bar stock has become a sort of "sacred cow" affair where few dare to suggest changes and all are visibly impressed by the profundities of chemical compositions.

It would seem that little is gained from an inflexible policy for alternate metals. And much is lost.

Substitutions Other Than in Grade or Type

Another phase of the problem is the question of substitutions other than those where one grade or type is used in place of another. Quite often a shortage of one size of metal can be overcome by changes that do not necessitate going to another type or grade. Some of the changes that can be made are as follows:

(1) If cold finished stock is not on hand, a larger size of the same type of steel in hot rolled can be used. Thus, 2⅛" diameter C-1020 Hot Rolled is under most circumstances a satisfactory substitute for 2" diameter C-1020 Cold Drawn.

(2) If necessary a slightly larger size of cold finished bar stock can be used. Thus, 2 1/16" diameter C-1020 C. D. for 2" diameter C-1020 C. D.

(3) The same size in cold rolled can be substituted when hot rolled is not in stock.

(4) Many times bar stock can be used when tubing is not in stock.

(5) Flat stock can often be substituted for square stock. A 2½" x 2½" x 1" flange can be made from 1" x 2½" flat stock cut a little more than 2½" long as well as from 2½" square stock cut a little more than 1" long.

(6) Annealed alloy stock can be used where heat treated bar stock is required. A-4145 Hot Rolled Annealed can be used in place of A-4145 Hot Rolled Heat Treated if the annealed stock is heat treated in the plant. Where the parts can not be heat treated after machining, the annealed stock can be cut to lengths and treated before machining.

(7) Some plants distinguish between such treatments given bars as annealed, pickled, rolled, normalized, drawn, etc. In many cases these different treatments given bars are so slightly different in physical properties as to be of little importance for most parts. Thus, if an

order calls for hot rolled annealed stock, in most cases hot rolled as rolled, hot rolled normalized, etc., can be substituted. The use to which the end product is to be put is the important consideration.

Formalizing Substitutions

The substitutions listed above can often help eliminate grave bar stock shortages and thereby prevent production tie-ups. As such they are of great value to purchasing, production, and the shop as a whole. Because of their value, they should be formalized into definite company policy. Policies covering these matters can be quite explicit since these substitutions do not ordinarily require a great deal of individual judgment. Company policies may determine that certain substitutions are more desirable than others and may state the conditions under which the substitutions can be made. These policies should be drawn up by some authorized person or persons, with the approval of metallurgist or engineer, and printed in permanent form. Such a printed form can be of value in purchasing bar stock. It permits greater flexibility in making purchases and provides for the contingencies that always arise.

Selecting Alternate Metals

However, when it comes to the matter of alternate metals and substitutions of one grade and type for another, broad, general policies are not sufficient. Definite steps should be taken to prevent indiscriminate use of the privilege of substituting one metal for another. Flexibility in the use of alternates should be present; but it should be flexibility within defined areas. The question of alternate steels and alternate metals can be approached in several manners.

Charts of Alternates

One method is that of using charts of alternate metals. These charts are drawn up by engineering, design, or any other qualified department. All metals that are used commonly in the plant are grouped together on the chart in general categories within which substitutions can be made freely. The grouping is based on such factors as parts made, types of metals used, fabricating processes, and similar factors. Thus, category No. 1 on such a chart might be low carbon steels as C-1018, 1019, 1020, 1021, 1022, 1023, etc. If C-1020 is specified, any of the other steels in the category are acceptable as alternates. A second category might be carburizing steels such as A-3120, A-4615, A-4620, A-8615, A-8620, etc. The manner of grouping and the nature of the groups can be based solely on the experiences and practices of individual companies. There can never be any ready-made groupings of metals.

Charts of alternate metals are valuable in that they give purchasing and other departments of the plant a valuable guide in ordering and using metals. Charts simplify the problem of purchasing bar stock and add flexibility in the choice of one metal over another. The metals within each group should be limited to metals carried commonly in stock and to metals that can be obtained without too great difficulty.

Such charts are valuable but their shortcomings must also be considered:

(1) It is difficult to group steels so that they will apply to all parts that are made in the plant.

(2) Each part has certain requirements that may be met best by certain metals within a category and not by others in the same category.

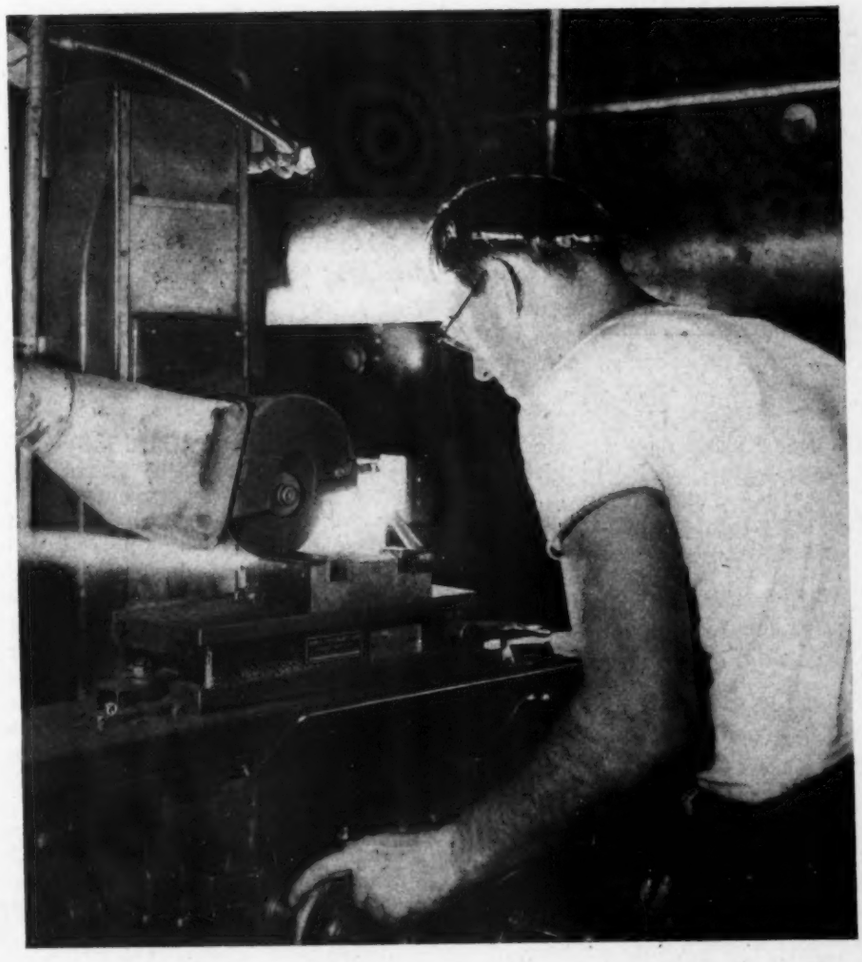
(3) Charts of this nature can be abused.

(4) Modifying phrases such as "to be used for larger sections only" are indefinite and subject to individual interpretation.

Charts of alternate metals, despite their shortcomings, are of considerable value. Their use will result in better utilization of metals.

Alternates on Method Sheets

Another system for indicating possible alternates is one wherein alternates are indicated individually for all parts made in the plant. For example, Part Number 23335, a piston, is made preferably from C-1022, but as alternates C-1019, C-1020, and C-1117 may be used. A similar list of alternate metals is made up for each part. This action makes the selection of alternates exact, precise, and eminently more desirable. Here the peculiar problems of fabricating, heat treating, machining, etc., of individual parts are taken into consideration.





Under such a system, each method sheet (or, as sometimes called, process sheet, operation layout, production routing sheet) lists in the material column the preferred metal for the part and all other alternates that may be used. The alternates are listed in order of preference.

In establishing lists of alternate steels for parts, engineering or design departments should work closely with purchasing and production control. Those who make out the lists should be aware of the exact nature of stock on hand; they should know the types, sizes, grades, and finishes of bar stock carried regularly in stock. And they should be aware also of the purchasing conditions for bar stock. To list obsolete metals, or metals that are difficult to obtain can be of little practical value. Only metals that are commonly available and that are procured easily should be listed. In this, the purchasing agent can offer a good deal of practical, first-hand knowledge and experience.

Some parts can be made only from certain steels; in such cases there is no point in trying to determine lists of alternates. The one desired steel should be listed without any alternates. But, on the other hand, there are many parts that can be made from almost any stock on hand. For such parts the range of metals to be used should be as broad as possible. Bar stock for parts that are subject to no stresses and strains and serve no important functional purposes in the operation of the unit can often be designated as being made from "Steel." No alternates need be given and no particular metal specified. When material is ordered for the job, obsolete stock or stock that would otherwise be scrapped can be used. To specify a certain group of steels for such a part is often unwise since it can be made from anything that is available.

With this type of system in full operation, the question of using alternate steels is simplified and made exact and precise. This system coupled with formalized company policies regarding other substitutions will solve most problems connected with using and ordering bar stock.

Who Can Make Changes

Once the system of alternate steels and substitutions has been established, the use of the system should be determined. The first factor to be considered is that of who is allowed to make the changes outlined on the methods sheet and defined by company policy. Ordinarily, production control and material release departments should be allowed to select alternate metals on the basis of stock on hand as revealed by their inventory records. Thus, if A-4615 Hot Rolled Annealed is indicated for a part, these departments should be permitted to use A-4620 Hot Rolled Annealed if this type of steel is listed as an alternate and if A-4615 is not available. And any change in size, finish, or treatment of bars as outlined in company policy regarding these matters should be made by production control or material release if these departments feel such changes are warranted.

The purchasing department should also be allowed to select from among desired alternates when the metal called for is not available for purchase. In this way, purchasing will be able to get metals quicker and, in many cases, cheaper. Often advantageous purchases can be made if purchasing is given a choice in using alternates. Market conditions, stock on hand at vendors, shipping conditions, location of vendors, are but a few of the factors that govern purchasing's choice of alternates.

The storeskeepers should have the privilege of making substitutions only to a restricted degree. Many times wide-awake storeskeepers will be able to use scrap materials or obsolete stock for orders, provided they keep within the list of alternates permitted to be used for the parts in question. He may make such substitutions only after consulting some higher authority. But in all cases, he should be permitted to suggest alternate materials whenever such a suggestion will result in the use of slow-moving, obsolete, or scrap bar stock.

Paper Work Changes

When alternate steels are used in place of the steel originally specified, this change should be indicated clearly on the method sheet. This is of special importance where parts are to be heat treated. Each grade of steel requires distinct heat treat practices; therefore, the heat treat department should know the exact grade and type of steel they receive. This can be indicated by circling in red the alternate steel selected or in some other simple manner. If this is done, all who are responsible for fabricating parts and treating parts will know exactly what they are working on.

If changes in the type of steel or in the size, finish, or treatment of bars are made after the material requisition has been made out, the requisitions should be corrected to show the change. Otherwise errors will appear on inventory records. This is obvious. If the requisition from which postings on inventory cards are made calls for 2" diameter C-1020 Cold Drawn and the material delivered is actually 2⅛" diameter C-1020 Hot Rolled, this change must be noted on the requisition. If this step is neglected, the card balance for the Cold Drawn steel will show an overage while the card for the Hot Rolled steel will show a shortage.

The system of alternate metals and the practice of controlled substitutions can be highly beneficial to users of bar stock. A system as outlined in this article should help make purchasing of bar stock and the use of bar stock more scientific and more economical.



CONSEQUENCES of FRAUD

Purchasing agents must be on guard against a variety of circumstances and acts which have the legal effect of fraud in business

Know your responsibilities, your rights, and the proper legal remedies

By LEO T. PARKER

TO the average purchaser the term "fraud" is always associated with distinctively illegal acts, as deceitful statements of a seller concerning the quality of merchandise.

However, the consequences of fraud may be equalled, very frequently, for benefit of a purchaser, by purely legitimate conduct, promises and dealing of the seller. The purpose of this article is a review of late and leading higher court decisions illustrating this latter classification of legal controversies.

Hidden Defects

According to a late higher court decision, if a sale contract contains no clause excluding implied guarantees, the purchaser may rescind the contract on discovery of hidden defects in the subject of sale. Thus hidden defects are fully equal, from the standpoint of benefit to the purchaser to fraud of the seller.

For illustration, in Nelson v. M. C. M. Truck Lines, 25 So. (2d) 236, reported May, 1946, the testimony showed facts, as follows: A buyer named Nelson purchased from a seller one Model 104 Northwest Dragline for $6,500 cash. Nelson sued the seller and asked the court to declare the contract void, and compel the seller to return the purchase price.

During the trial Nelson proved that the machine possesses hidden defects so as to render its use unreasonable, inconvenient and unsatisfactory.

The higher court promptly rendered a verdict in favor of Nelson. This court said that a subject of sale possesses redhibitory vices if it cannot be successfully used for the purpose for which it was constructed and sold, and that the purchaser may rescind the contract which contained no clause excluding an implied guarantee.

Plural Responsibility

Although neither a distributor, manufacturer nor parts supplier practiced fraud in the sale, distribution or manufacture of a product, they may be jointly or severally liable for damages caused by hidden defects in the subject of sale.

For example, in Texas Motorcoaches v. C. F. Motors Company, 154 Fed. (2d) 91, reported April, 1946, a motor bus was wrecked causing personal injuries to seventeen passengers, as well as certain property damage. The bus company paid out $20,939.78 in their settlement to injured passengers, and also spent $399.16 in repairing the motor coach. The subsequent suit by the bus company involved the seller and distributor of the bus; the manufacturer of the bus; and the manufacturer of the wheels and brake drums.

During the trial the bus company alleged that the wreck was caused by a defective brake drum which caused the bus to run off the road into the ditch.

Obviously, there was no fraud on the part of either the bus distributor, the bus manufacturer, or the wheel manufacturer, yet this higher court held that whether there was breach of warranty on the part of the wheel manufacturer, the bus manufacturer, or the distributor, or on part of all, was for the jury to decide.

In other words, either or all of these firms may be held liable to the bus company for the total amount of $21,338.94 paid out as a result of the wreck, depending upon whose negligence caused the wreck.

Extreme Illustration

An extreme example of a contract of sale having consequences equal to fraud is Mead Company v. Yawn, 37 S. E. (2d) 372, reported June, 1946. The facts of this controversy are that a manufacturer sold a saw-

mill to a distributor who sold the sawmill to a buyer. The buyer gave the distributor notes payable to the manufacturer in payment for the mill.



The buyer refused to pay for the mill and the manufacturer sued the buyer. In other words, the manufacturer who had no dealing or personal contact with the buyer sued to recover payment for the mill. The buyer's reason for refusing payment was that the mill did not operate satisfactorily, and in accordance with the verbal guarantee of operation given by the distributor. The manufacturer defended his plea by introduction, as evidence, of his written guarantee containing a clause that he would *only* replace defective parts and that no agent had authority to vary or add to his guarantee.

Thus, the buyer was compelled to defend a suit filed by the manufacturer, with whom he had no dealings, and who refused to take responsibility for verbal warranties made by his distributor.

Seller Misrepresents

After listening to all testimony the higher court finally decided that the distributor was not a legal agent for the manufacturer. Therefore, the verbal warranty made by the distributor was not rendered void by the clause in the manufacturer's written contract that no agent could make a valid verbal guarantee. And, furthermore, this higher court held that if the buyer breached his part of the contract to promptly return defective parts of the mill, he must pay the amount of the notes to the manufacturer, although both the distributor and the manufacturer breached their guarantees.

The rule of the law is well established that where a seller fails to fulfill a valid warranty, or the purchaser was induced by false and fraudulent representations to make a contract, he has any of three remedies: (1) He may rescind the contract and sue for the money paid and return the goods; (2) he may refuse to accept delivery of the goods; or (3) he may retain the goods and sue for the damages he has sustained by reason of fraudulent representations made by the seller.

However, the purchaser can have only one of these three remedies.

For illustration, in Viking v. McMeachin, 291 Pac. 521, it was disclosed that a person who purchased merchandise paid a part of the purchase price in cash and agreed to pay the remaining amount in installments. The contract provided that in case of default of any of the payments the seller "shall have the right to take possession of the merchandise".

The purchaser refused to make the last few payments on the contention that the goods were useless for the intended purposes, and he failed to offer to return the goods to the seller.

After considerable correspondence the seller sued to recover possession of the merchandise, and the purchaser filed a counter suit asking for damages as a result of the false representations of the seller. This court said:

"It is clear from the record in this case that the defendant (purchaser)



never restored, or offered to restore, the property purchased, but, on the contrary, refused to restore the same. . . . . Under this situation his (purchaser's) only relief would be . . . . that of retaining the property and bringing an action to recover the damages sustained by reason of his reliance upon the false representation. . . . . ."

Hedging Contract Valid

Hedging is a common and proper practice of millers, merchants, and other purchasers who must make contracts in view of the future needs of their business. Such a contract is neither fraudulent, illegal, immoral nor anti-social but has a definite place and performs a useful economic function in our system of production and distribution.

In other words, a hedging contract is classified by modern courts as a guarantee or warranty on the part of a seller against price variations to the purchaser. Such a contract is valid *provided* it is not formulated to result in its being not strictly a hedging, but a gambling contract.

The real difference between hedging and gambling is that the hedger has a legitimate interest to protect apart from the hedging transactions, while the gambler has no interest



except in the transactions depending on the rise and fall of the market.

For example, in Boill-Harris v. Lewis, 187 S. W. (2d) 17, reported September, 1945, the evidence showed that a seller agreed to refund the buyer 35 cents per bag on 25,000 bags of sugar by means of hedging on the sugar exchange, through use of the buyer's name in order to comply with the sugar exchange rules. Later the purchaser sued the seller for $13,807, which represented 35 cents per bag on the purchased sugar.

The seller contended among other things, that the contract was void and illegal because (1) it was conditioned upon there being a profitable speculation on the sugar exchange; (2) because it contemplated a gambling transaction; and (3) it violated the Clayton and Robinson-Patman Acts.

The higher court held the contract valid and held the seller liable to the purchaser for $13,807, saying:

"Nor do we think the contract of defendant to make the refund was conditioned upon there being a profitable speculation on the sugar exchange. That transaction was not to be a speculation but a hedging to stabilize the price of $4.40 against future fluctuations of the market.... We think there is no ground for saying that the contract sued on was illegal as contemplating a gambling transaction."

For illustrative purposes we shall review a few contract law suits in

which some contracts were held void, as based on fraud.

First, it is important to know that a seller is liable in damages for fraudulent statement or promises made to a purchaser who *relied* upon such statements *before* the sale was made. However, a purchaser must prove these facts, otherwise he will not be awarded a favorable verdict.

For instance, in Campbell v. C & C Company, 21 N. W. (2d) 427, reported March, 1946, the testimony proved that a purchaser refused to make agreed payments for merchandise and the seller repossssed it. Later the purchaser sued the seller for heavy damages and alleged that the seller falsely and fraudulently represented to him the quality of the merchandise.

The higher court refused to hold the seller liable, first, because the purchaser failed to prove that he relied upon the alleged false statements made by the seller and, further, the purchaser did not prove that the fraudulent statements were made *before* he signed the contract of sale. This court said:

"The burden is on the plaintiff (purchaser) to prove by preponderance of the evidence, the following essential elements constituting fraud and deceit: (1) That such defendant (seller) made a material representation; (2) that it was false; (3) that, when made, such seller knew that it was false, or made it recklessly, without any knowledge of its truth and as a positive assertion; (4) that he made it with the intention that it should be acted on by the purchaser; (5) that the purchaser acted in reliance on it; and (6) that he thereby suffered injury. . . . . Viewing the evidence in its favorable light, it fails to show that the plaintiff (purchaser) relied upon any representations made by the C & C Company (seller), that constituted an inducement to the plaintiff (purchaser) to sign the sales contract."

Signature Validity

The fact that a signature is printed, or type-written, instead of being pen written, is not an implied element of fraud.

For illustration, in Anstine v. McWilliams, 163 Pac. (2d) 816, reported January, 1946, it was shown that a person named Anstine purchased merchandise. He became delinquent on agreed payments, but received a letter on the seller's letter head, and having a printed signature, saying that if he would continue to make the agreed monthly payments "there would be no trouble". Later the seller argued that he had a legal right to take possession of the merchandise because no proof was given that the printed signature on the letter was valid.

Nevertheless the higher court held the letter good evidence saying:

"The rule that the genuineness of the signature to a reply letter may be assumed applies to a letter signed in typewriting, or by rubber stamp."



No employee may enforce a contract based on fraud.

In Sever v. Knight Company, 164 Pac. (2d) 522, it was shown that a company was about to become insolvent. The company's president and an employee signed a contract by which the company sold to the employee merchandise for $8,000 worth $31,450.

The company did not become insolvent and the employee sued the company to compel it to fulfill the agreement. The higher court refused to enforce the contract, saying:

"We are convinced that in the great majority of jurisdictions a party to an executory contract or conveyance which is fraudulent as to creditors cannot invoke the aid of a court to enforce its terms."

Also, see Ager v. Duncan, 50 Cal. 325. This court said:

"In such cases it is immaterial by which of the parties the fraudulent nature of the contract is disclosed to the court. As soon as the fraud is made to appear by either of the parties, the court will refuse to interfere, and leave them as they were."

Conflicting Testimony

Generally speaking, a higher court will approve a verdict rendered by a jury which based its verdict on conflicting testimony.

For instance, in Buckhantz v. R. G. Hamilton & Company, 163 Pac. (2d) 756, reported January, 1946, it was shown that a buyer of cotton sued a seller to recover damages on the grounds that the seller failed to deliver the entire amount of the cotton specified in a written contract. Also, the buyer testified that the small quantity of cotton which was delivered by the seller was not of the quality or grade specified in the contract.

On the other hand, the seller offered positive testimony of his employees who handled the cotton that the grade and quantity of cotton complied with the terms of the contract.

The jury listened to this conflicting testimony and decided that the buyer was not entitled to recovered any damages. The higher court approved the verdict, saying:

"The finding of fact that the cotton which was delivered by respondent (seller) to appellant (buyer) was in accord with the contract was supported by ample substantial evidence. . . ."

Wrong Person Sues

No person may sue a seller for breach of a warranty unless the testimony proves that he was in fact the purchaser. Proof that he paid in full or in part for the subject of the sale will not justify a suit against the seller.

For example, in Smith v. Bloom, 65 N. E. (2d) 483, reported May, 1946, it was shown that a person named Smith made a down payment on a printing press. The sale contract did not include Smith's name but included the seller and another person. Later the undisputed testimony showed that the press would not function properly at temperatures maintained in the plant in which it was installed. Smith filed a suit against the seller to recover damages for breach of a warranty that the press would operate satisfactorily.

The higher court held that Smith could not maintain the suit since he merely had provided sums for the down payment on the press which was in fact sold under a conditional sales contract to another.

Of course, the user whose name was included in the conditional contract could have maintained a suit against the seller for breach of the contract.

The amount of damages for which the seller would have been liable, if the testimony proved that a breach occurred, would have been the full damages sustained by this person, plus the down payment made by Smith.

Considerable discussion has arisen from time to time over the legal

question: If a debtor sends to a creditor a check drawn on a bank and representing the amount of the debt, is the debt extinguished?

The answer is no, if the creditor refused to accept the check as full payment.

For example, in Modern Engineering & Service Corporation v. McCrea, 46 Atl. (2d) 767, reported June, 1946, it was shown that a contractor agreed to supply gas ranges for an apartment building for the sum of $1,600. The property owner refused to make payment of the $600 balance due on the contention that the contractor had not fulfilled the terms of the contract. However, the property owner wrote the contractor a letter enclosing check for $342.17, upon which was printed a statement to the effect that the check was in full settlement of the amount owing. The property owner did not receive the check back and in subsequent litigation argued that the claim was settled in full. The higher court refused to agree and stated important law, as follows:

"While a large proportion of business today is conducted through the medium of checks, the general rule is that the receipt of a check is not payment of a debt until honored, unless accepted as payment."

Also, this court held that a check is not a "good tender" of payment even if on a solvent bank, and need not be accepted by a creditor entitled to cash.

Therefore, a purchaser who agrees to pay cash for merchandise breaches the contract when he offers a seller a check in payment for the purchased merchandise.

Both Employer and Employee Liable

It is well established law that all persons and firms are liable for damages caused by their negligence. Thus an employer may be liable for negligence of his employee, and the latter is also *personally* responsible for his own negligence.

For illustration, in Sears v. Creekmore, 23 So. (2d) 250, reported November, 1945, the testimony showed facts, as follows: A building owner purchased from a seller some linoleum. The contract included complete installation. On one job, the seller's regular employee, who ordinarily laid such coverings, was not then available and the seller engaged another to do the job. The employee requested that the building be heated inasmuch as the weather was too cold for a satisfactory manipulation of the material. Accordingly a gas stove and a water heater which were then lighted were placed in operation. After the material had become pliable, he shut off the gas, and moved the stove after disconnecting it from the gas supply. The gas supply was not cut off, but the employee plugged the open end of the fuel pipe and proceeded with his work. When he had completed laying of the strip beneath the stove, the improvised plug in the pipe was removed and he attempted to reconnect the pipes while the gas pressure was still present. Escaping gas, ignited by the pilot light of the water heater, burst into flames. Despite confused efforts to suppress the flames, they spread until the building and most of its contents were completely destroyed. The property owner sued both the seller and the employee for damages. In holding the property owner entitled to a full recovery of damages, the higher court said:



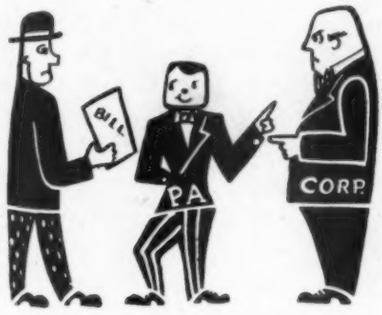
"Burley (employee) was of course acting with full authority in laying linoleum. Such activity was not merely in the course of his employment; it was his employment. Such tortious conduct consists not in doing the thing for which he was employed but in doing the job in a manner or by means that constitutes negligence."

Employee Personally Liable

Considerable discussion has arisen from time to time over the legal question: When is a purchasing agent personally liable on a contract when he intended to bind his employer?

The answer is: An employee, as a tract in his own name without disclosing the identity of his employer renders himself personally liable, even though the other party knows that he is acting as agent for his employer, *unless* the employee proves it was the "mutual intention" of all parties that the employee should not be personally obligated.

See Electric Machinery Company, Inc., v. Block, 193 S. W. (2d) 631, reported June, 1946, where it was shown that a corporation official purchased a considerable quantity of equipment which the seller charged personally to the official. Later the official contended that he was not personally obligated to pay for the equipment because it was used and purchased by another corporation of which he was president.



The higher court held the official personally liable to pay for *all* of the purchased equipment because he failed to prove that the seller knew that he was acting in representative capacity, and also that the seller had agreed not to expect payment from the official.

Not Full Satisfaction

According to a late higher court decision no purchaser is bound by a settlement contract in "full" satisfaction for all claims, unless both the buyer and seller knew about *all* claims when the contract was signed.

For illustration, in Williams v. Mid-South Company, 25 So. (2d) 792, reported June, 1946, it was shown that a disagreement arose between a buyer and seller. The suit was settled out of court and a clause in this settlement contract stated that the seller accepted $16,300 in "full satisfaction," and release of all claims against the purchaser.

Later the seller filed another suit against the purchaser to recover $6,013.48, based on claims he did not know existed when he signed the settlement contract.

The purchaser argued that he could not be liable because in the settlement contract the seller had agreed to accept the amount of $16,300 as *full* satisfaction of all claims.

However, since the seller did not know about these additional claims when he signed the settlement contract, the higher court held the purchaser liable on these new claims.

Salesmen and the Purchasing Department

Purchases and sales are made through the contact and personal relationship of two individuals; cooperation is the keynote

By R. A. McCUISTON
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Thomasville Chair Company
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IT is always enlightening to know the standpoint from which an article on any subject is written. This is written from the standpoint of a Purchasing Agent for small business. I shall not attempt to make a clear line of demarcation between large and small business, because large and small are relative terms and everyone has his own idea as to size. Certainly the U. S. Steel Corporation and General Motors are big business. On the other hand the Textile Industry as a whole is big business, but it is made up of many small business units and, therefore, comes under the classification of small business.

The relationship between salesmen and the purchasing department resolves itself into the business dealings between two individuals. In the majority of cases, these individuals represent two corporations; however, we must remember that no business can be done until the salesman and the Purchasing Agent agree about price, deliveries, quality and any other factors which may enter into their discussion of the business at hand.

There was a time when price and quality were the main factors to be considered in any purchase, because more than one dependable supplier could be found to furnish each product required. At present, and for some time past, a dependable source of supply is a real joy to the heart of any Purchasing Agent.

A salesman who thoroughly understands his business, and will learn the needs of his customer can be of inestimable value to a Purchasing Agent in locating satisfactory sources of supply, and in keeping them dependable.

In order to foster a sound and profitable relationship between the purchasing department and salesmen, the Purchasing Agent should give careful consideration to the way in which Salesmen are received and treated by his purchasing department. All salesmen have a right to expect courtesy and consideration from the Purchasing Agent on whom they call. The salesman should not be kept waiting an undue length of time for his interview with the Purchasing Agent. When he enters the Purchasing Agent's office, and presents his story, he should be given the Purchasing Agent's undivided attention.

Handling the Interview

If no order can be placed at the time of his call, the interview should be terminated as quickly as possible in the interest of both parties. If it is necessary to enter a discussion of the product being offered, the Purchasing Agent should be careful to make his questions clear and logical, so that they will lead directly to the information he wants. When he has reached his decision, he should tell the salesman what that decision is. The interview should not be hurried, because no two persons can do justice to themselves in an interview which has the pressure of haste behind it. It takes time without haste to negotiate wisely.

When a salesman leaves, the Purchasing Agent has done a good job with the interview if the salesman says to himself, "I am going to do my best to merit some of this man's business."

The salesman should be given a welcome when he enters and when he goes out he should feel that he has had a fair chance to present his product and that he has been heard intelligently. I should like to say something here about "intelligent listening." When undivided attention is given to a speaker, he is complimented, and when he knows that his hearer is listening, he will not wander in his presentation. In turn, the listener will save time and will get the information he wants in concise form. Thoughtful questions are a part of intelligent listening, and such questions will keep the speaker on the main line of his subject.

On the other side of the desk, the Purchasing Agent has a right to expect certain qualities in a salesman. I think the first quality should be honesty, or perhaps integrity may be a better word to express my meaning. No Purchasing Agent wants to be deceived or misled about any part of a negotiation in which he may be participating.

Address at the fall meeting of the Carolinas-Virginia Purchasing Agents Association, Greensboro, N. C., Sept. 14, 1946.

A salesman must be well informed about his own product, and he should also know how his product will fit into his customer's production schedule. A good salesman must know something of his customer's business, and what the customer's requirements are. The salesman should have an inquiring mind, because no buyer's demands are static. The same materials may be used in one way today and in quite a different manner tomorrow. The salesman should be conversant enough with his customer's business so that he can offer sound suggestions about substitute materials should the need arise.

Personal Qualifications

A good salesman must be enthusiastic about what he is selling. If this enthusiasm is based on a thorough knowledge of his product, it will be a great help to him when the going is tough. It will furnish the motive power for helping to solve some of his customer's problems.

All Purchasing Agents like to see a salesman who knows his company policies, and can correctly interpret them to his customers. On the question of price, the salesman should know what the price is and quote it. If the Purchasing Agent can make a salesman reduce his price, it is a clear indication that the salesman has no real selling price, and consequently the Purchasing Agent is never sure that he has gotten the best price that salesman has to offer his trade.

In the foregoing remarks I have tried to point out a few aspects of the Buyer-Salesman relationship and I now want to continue with some further remarks about the purchasing function.

The war has in many ways demonstrated the importance of the purchasing function in industry, and many of our former methods of procurement have been changed. The Purchasing Agent who hopes for the return of the good old days when he could sit at his desk, and have all the products he wanted brought to him by a hoard of competing salesmen is no doubt indulging in wishful thinking. The Purchasing Agent must have some of the aggressive characteristics of a good saleman, because in many instances he has to go out and get the products he wants. It is often necessary for the Purchasing Agent to deal directly with some of his producers, but this can be done with the knowledge and help of the salesman representing those producers.

Both the Purchasing Agent and the salesman must be able to adjust quickly to changing conditions. This question of adjustment is of vital importance, and in truth if a Purchasing Agent is to attain any measure of success in his chosen profession, he must be able to see and correctly evaluate changing conditions before changes are recognized by the public at large. A well informed salesman can be the Purchasing Agent's best friend and most able ally in carrying out a job of intelligent purchasing.

It is necessary for any live Purchasing Agent continuously to extend his field of knowledge, with particular regard to the products which he purchases, and if the various salesmen calling on him are themselves specialists in their own lines, these salesmen will be of tremendous assistance to the Purchasing Agent in learning what there is to know about the products made by different vendors.

In this article I have tried to stress the vital necessity of cooperation between Salesman and Buyer, and before closing I must make the all important point that no true cooperation can be expected unless there is mutual confidence. The Purchasing Agent by his actions must demonstrate to salesmen that he always acts in good faith, and will not stoop to sharp practices for any reason. The salesman in turn must recognize the fact that the Buyer is in duty bound to negotiate the best trade possible for his own company, and has a right to expect from the salesman the best price, commensurate with the quality of the goods, that the salesmen's company is able to give.



"He used to do those singing commercials on the radio."

A BLUEPRINT of the SOCIAL REVOLUTION

The economic factors that we ordinarily use to measure business health are but surface symptoms of the world-wide social system

The underlying pattern is clear if we will only take the trouble to analyze its trend

By J. W. KNOWLTON
Economist
Duke Power Company
Charlotte, N. C.

OFTEN by contrasting times in which we live with those that have gone before, man can obtain a perspective—a view of the course they have been pursuing and often sum total of the accumulated changes that have occurred.

Contrast frequently provides a measure by which conduct may be reassessed and old views once firmly held may be retested and adjusted. All our hopes of the future depend on a sound understanding of the past. Knowledge of history helps us to understand our own times and foresee what is coming next. Looking back over the past twenty-five years, we find that most of the accumulated capital of families in Western civilization and practically all the countries in Europe has been pretty well wiped out. During this generation of family bankruptcies, we have seen one plan after another offered to cure the international illness, either a plan for large international loans, a plan for disarmament, or plans for world co-operation. Each of these proposals has been followed by a collapse even more serious than the preceding ones — indicating the desperate nature of the underlying sickness from which the world is suffering.

Taxes Break Governments

It is my contention that this underlying sickness is caused by the social revolution which is at work under our body politic. To my mind, this sickness is running a perfectly normal course. I have felt that the outstanding development from an economic point of view of the postwar period would see both corporations and the important middle class caught in a vise of high costs and taxation on one side and lower returns at the other end of the closing vise, due to competition.

This usually causes businesses eventually to make real losses despite apparent money profits. They gradually run short of real working capital, cut their dividends and dilute their common stocks after an earlier period of illusory boom. As never before, there are forces at work that make this a sucker era. All the forces at work have been increasing the pressure on workers and the middle class. If an election were to be held now, they would express the punishment they are receiving by a vote of "no confidence" against the party in power. Since no election is on the horizon, they must express themselves by a record wave of strikes plus reduced purchases all around.

Rise of the Mass

From time to time I have pointed out that when the amount of taxation in a given country passed the point of 20% of the entire national income—the country's economic system began to disintegrate, to be followed in the end by a complete breakdown. It was found it did not make the slightest difference what form of economic system prevailed in the country—whether it was communism, capitalism or any other form—the provable fact was that the basic producers of wealth did not produce in a normal manner if they had to carry an excessive amount of taxation on their backs. When we see then, that the United States is now at a point where the combined taxation is almost one-third of every dollar produced, we can realize that it would take an optimist indeed, to believe that we were in a healthy condition. What the Communists overlook, however, is the fact that they too will break down when their taxation, whether direct or indirect, takes anything like one-third of the income of the country. Looking down underneath at the social revolution at work, what do we see?

First, we have the fact that the middle class is under attack, at the hands of the mass. The trend of social development the world over in the last few years has been in the direction of the liquidation of that class, economically and politically. It is simply the French Revolutionary principle of "Equality" in action. That this middle class, like the classes which it deposed a century and a half ago, may with no little truth be charged with the commission of suicide by default of responsibility in return for its privileges in no way alters the fact; it has simply made things easier for its antagonists.

The mass which has now arisen is the product of the Industrial Revolution in two respects—one, quantitive; the other, qualitative. That revolution did two things; it enabled an increase of population without precedent and at the same time improved the standards of living for its children. Thus, it provided both the numbers and the economic strength which have given the mass influence and power in the present world order.

Redistribution of Wealth

To show how this trend is working we have only to look at the generation of immigrants that began to come here in the "Eighties", working hard with their hands for their newly adopted land, raised large families and went ahead. With their newly won comforts, they vowed that their childen would not have to work so hard with their hands. The result was they raised a middle class generation of white collar workers, clerks, salesmen, bookkeepers, etc., who look down on those who worked with their hands. But now it is plain to be seen that this cycle has completed itself, and we find that those who work with their minds are now at a serious disadvantage as compared with those who work with their hands.

A period such as we are going through is a perfectly normal one.

Address at the fall meeting of the Carolinas-Virginia Purchasing Agents Association, Greensboro, N. C., Sept. 14, 1946.

Anyone who studies economic history at all knows that Nature has an unkind habit of periodically creating great redistributions of wealth. To some this is known as "going through the wringer". We had such a redistribution at the time of the Revolutionary War and at the time of the Civil War. This one is merely on a larger scale and in the nature of things, very few will survive it. The vise of social revolution now raging is precisely its horizontal character, and mass-democracy is a class-conflict product. The French Revolution was a typical class-conflict but it did not result in mass-democracy for the reason that the middle class which it established in power was anything but united.

The middle class has no unity for it has nd faith in anything particularly beyond money and no real faith even in itself. The mass on the contrary was welded by Karl Marx into a solid and homogenous body with a gospel, a program, and a battle cry for war on everyone else: "Workers of the World, Unite." We see the modern versions of this philosophy in the C. I. O. and P. A. C. and there is no doubt but that they are using the technique of Karl Marx. Thus, today we have a well-organized mass party in society with the numbers and the will to take command, and against it a collection of scattered groups without any really common bond of unity beyond the desire to hold what they have.

Era of Fear

It was inevitable that the equalization of political power, the first phase of the French Revolution, should lead to a demand for equalization of wealth as the second phase. This is the real threat to personal freedom, all the more dangerous because people have allowed themselves to lose faith in the things upon which personal freedom depends and justifies itself, namely the notion of the person. As a consequence, they are confronted with a deadly enemy, the Omnipotent State. Throughout the entire Western World there is a definite drift toward State Socialism based on the belief that it is capable of giving economic security and of eliminating unemployment. If one were seeking a simple general statement in which to describe the state of the world today, it would be that we are witnessing a dissolution of order.

As our only living ex-President, Mr. Herbert Hoover, said on his return from a world tour and on his recent 72nd birthday, August 10th, "The dominant note in the world a year after World War I was hope and confidence; today it is fear and frustration. My own impression is that Russia is obstructing to gain time for elimination of all Non-Communistic elements and thus, consolidation and practical absorption of these areas behind the iron curtain and Manchuria. Her invigorated Fifth Column in every country adds to confusion. The rest of the world is rapidly concentrating its fears, and consequently its animosities, toward her." As we watch this underlying revolution at work and the vast changes which it is bringing to bear, we must realize that the new thing in the world is the Mass; new, that is, as the dominant factor in shaping society.

The state that is emerging is a Mass State. Political power will have its source in the mass; the rulers will rule in the name of the mass and leading it a good deal less than humoring it. Much will depend upon the humor of the mass, and the humor of the mass will depend upon the scheme of values, that is to say, what the things are that it considers most important. The leaders will have to be skilled in the art of demagogy, that is the art of partly following and partly leading the mass. It is indeed a sad commentary to state that the future within the United States is favorable to the demagogue of the Huey Long type. Technology everywhere, and especially in the South as evidenced in the recent large textile consolidations, is driving industry into a collective scheme of organization, to larger and larger and more and more completely integrated productive units.

Totalitarian Trends

In this process the middle class will steadily be eliminated, as it is yet historically to be demonstrated that any capitalistic economy can achieve stabilization at boom levels. The revolution to make the democracies build a new collectivist world is now under way and the only question is whether it will be violent or peaceful. Unlimited debt expansion steadily brings on totalitarian methods of control. As soon as the Middle Class loses control, you will inevitably have a conflict between the Fascist potential at the top and the Communist potential at the bottom. There can be but one result—Communism.

It would be foolish to say that many American workers are Communists, but they have learned how great their power is when they vote as a class, and in the hard times which follow every great war we are likely to see many things that will be strangely foreign to American ways and customs. Few voters analyze social or political matters or try to look into the future. They know when they are well off and that is enough. Men think with their stomachs up to the level of security; above that level, they think with their pocketbooks. Already we have demagogues in our midst, and worse still, we have class conflicts. And between real democracy and class conflict there is complete incompatibility.

If class conflict continues to grow, it will infallibly drive us to one or the other kind of a totalitarian government. In brief, Fascism or Communism is the result of a sick democracy, and a democracy becomes sick when party differences become party war. A class war in a democratic state inevitably tends to generate a fascist or communist state. As Bernard Baruch recently said, "While we are setting up machinery to stop wars between nations, we have not solved it within our own gates. Unless steps are taken to iron out disputes and work out a program on the basis of the principles which made this country great, we shall soon find ourselves in the morass of confusion that will bring us either to fascism or communism, and our form of government will have been lost."

The fundamental fact of our time is with the release of atomic energy and transmutation of matter by modern science we have witnessed a return to ancient dogma of unlimited government the world over.

The farmer is moving rapidly away from private enterprise into a controlled economy and so is the banker. We can't reap the profits from the use of taxpayers' money or government power without the penalty of the loss of freedom. Very few people really care for liberty. What they crave is merely security, so every day in every way we drift farther and farther from the true conception of liberty as embodied in the Constitution.

Whether it is because she is temperamentally more volatile or because from her position in Europe, it is a fact amply borne out from a study of history that as France goes, so will go the Western World. So the question of how France is going is of paramount importance in gaging what is going to happen in this country. As to the question,

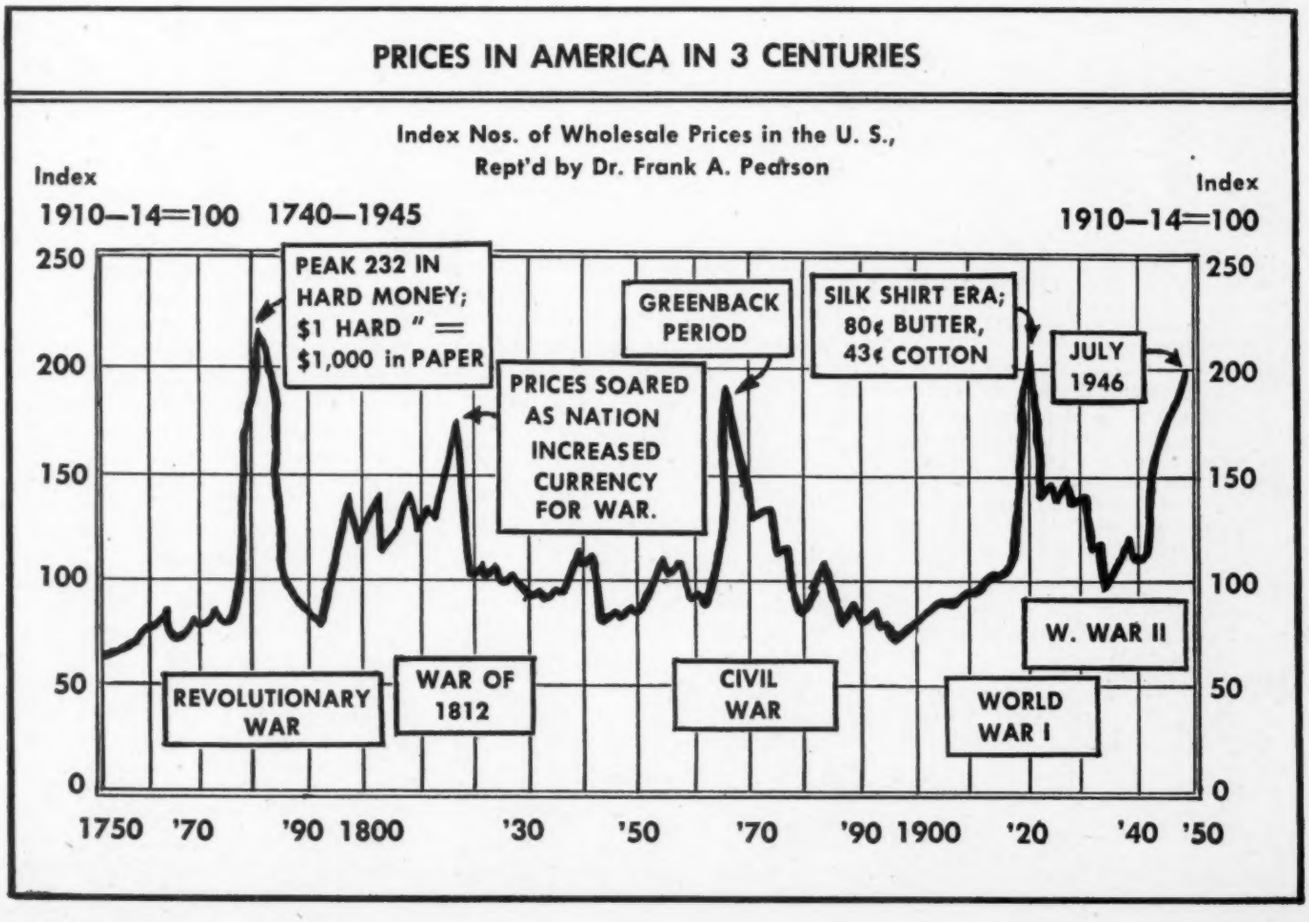
"Will France go Communist?", we can only say at the present time that the Communist influence has been temporarily checked, but control of the trade unions and key administrative posts gives them a strangle-hold on the French Economy.

Gustave Le Bon in his life-long study of crowds or the mass as brought in his book "Crowds, a Study of the Popular Mind", said: "Today the claims of the masses are becoming more and more sharply defined and mount to nothing less than a determination to utterly destroy society as it now exists, with a view to making it hark back to that primitive communism which was the normal condition of all human groups before the dawn of civilization. Limitation of the hours of labor, the nationalization of the mines, railways, factories and the soil, the equal distribution of all products, the elimination of all the upper classes, etc., such are these claims. Little adopted to reasoning, crowds on the contrary are quick to act. As a result of their present organization, their strength has become immense. The dogmas whose birth we are witnessing will soon have the force of the old dogmas, that is to say, the tyrannical and sovereign force of being above discussion. The divine right of the masses is about to replace the divine right of the Kings."

The Mirage of Security

What is the strongest political trend in the world today? After the last war, it was toward democracy, but somehow democracy failed the average man. When the depression came and he found himself unable to provide food and shelter for his family, he demanded security from want. To answer that demand abroad came the so-called strong men of the Hitler and Mussolini type, and Fascism was born. Men achieved security, of a kind, but they bartered their freedom for it, and soon they learned that power feeds on power and the only end of dictatorship is war which destroys all.

So, today, the trend is to the other extreme—to Communism. All over the world you see signs of it. China has largely embraced it; all of Eastern Europe is engulfed by it; France and Belgium are trending in that direction. Even here in the United States many labor unions are strongly Communistic; several political groups are dominated by it and it has its disciples in high places in the administration; and many Democrats fear that their party is being taken over by the Communists. And the reason? The same reason that has impelled man since time began—the longing for security as one of the dominant characteristics of all humankind. And now that the common man has realized his power, you find him all over the world banding together to take over all property to the end that he may find security from want that he has so long worked for. Always keep in mind that the war on wealth is revolutionary in origin and is not a temporary episode. What he does not seem to realize is that mere redistribution of property never has and never will solve his problem. It will provide him with temporary supply, yes, but supply is a continuing problem, and when his small share of the general distribution is gone, he will be worse off than he was before because production will either cease entirely or have been greatly curtailed.



Most of the private wealth that exists today is only of an imaginary nature, built on the capitalization of earning power. When the earning power ceases, the wealth evaporates. Nothing is so precarious as wealth; nothing suffers, dwindles and diminishes so rapidly.

We are now in the midst of the third great redistribution of wealth. As usual during such times, the people affected are not able to distinguish the forest from the trees.

Today, many industrial and commercial interests of the country are so high up in the clouds in their thinking that they misinterpret current trends as the beginning of a great period of production of wealth, and not the inevitable redistribution of wealth they temporarily control in name only. As for the security which the masses are demanding, there is no such thing and we're only fooling ourselves and paving the way for a tragic catastrophe if we demand it. As Benjamin Franklin said once said. "He who is secure is not safe".

Revolution Analyzed

And now we come to a blue print of the Main Trend as outlined by by that master financial historian, Thomas F. Woodlock.

I

The Revolution of 1789 was in its first stage, a middle class revolution against what was left of a worn out feudal social structure and was rapidly successful. It was completed in the following century and World War I wrote that stage's epitaph.

II

The first stage found the masses of the European peoples almost untouched, politically inarticulate and without sufficient economic strength to influence the main course of events.

III

The Industrial Revolution attained full flood early in the 19th Century. Its main effects were: (1) to increase the population's numbers at an unprecedented rate; (2) to create a new working class and concentrate it in the cities; (3) to improve its economic position.

IV

The result was to arouse that class to political consciousness, to render it articulate and to build up in it a great potential of political power.

V

This was the revolt of the masses described by Ortega Gasset in his classic of a dozen years back—the revolt of the mass against the middle class. With the completion of this stage, the Revolution of 1789 would reach its terminus and would have brought into existence a new social order.

VI

The outstanding characteristic of this new order would be the politics of the mass which in turn would be the politics of class motivated by a definitely class emotion and purpose, the purpose to rule. The new power would have all the machinery at its hand in universal suffrage awaiting only the awakening of the purpose.

VII

The essential characteristic of mass politics is the leader, for the mass can act only under leadership. The mass demands a god before anything else.

VIII

Mass politics is naturally totalitarian; the mass tends to identify the State with itself.

IX

In such a society personal freedom would have no place; the individual would exist for the State.

The International Phase

As someone said during the war that we could see and feel the war but not the revolution which was running under the war, so today the international phase of this social revolution is much easier to see than the internal phase.

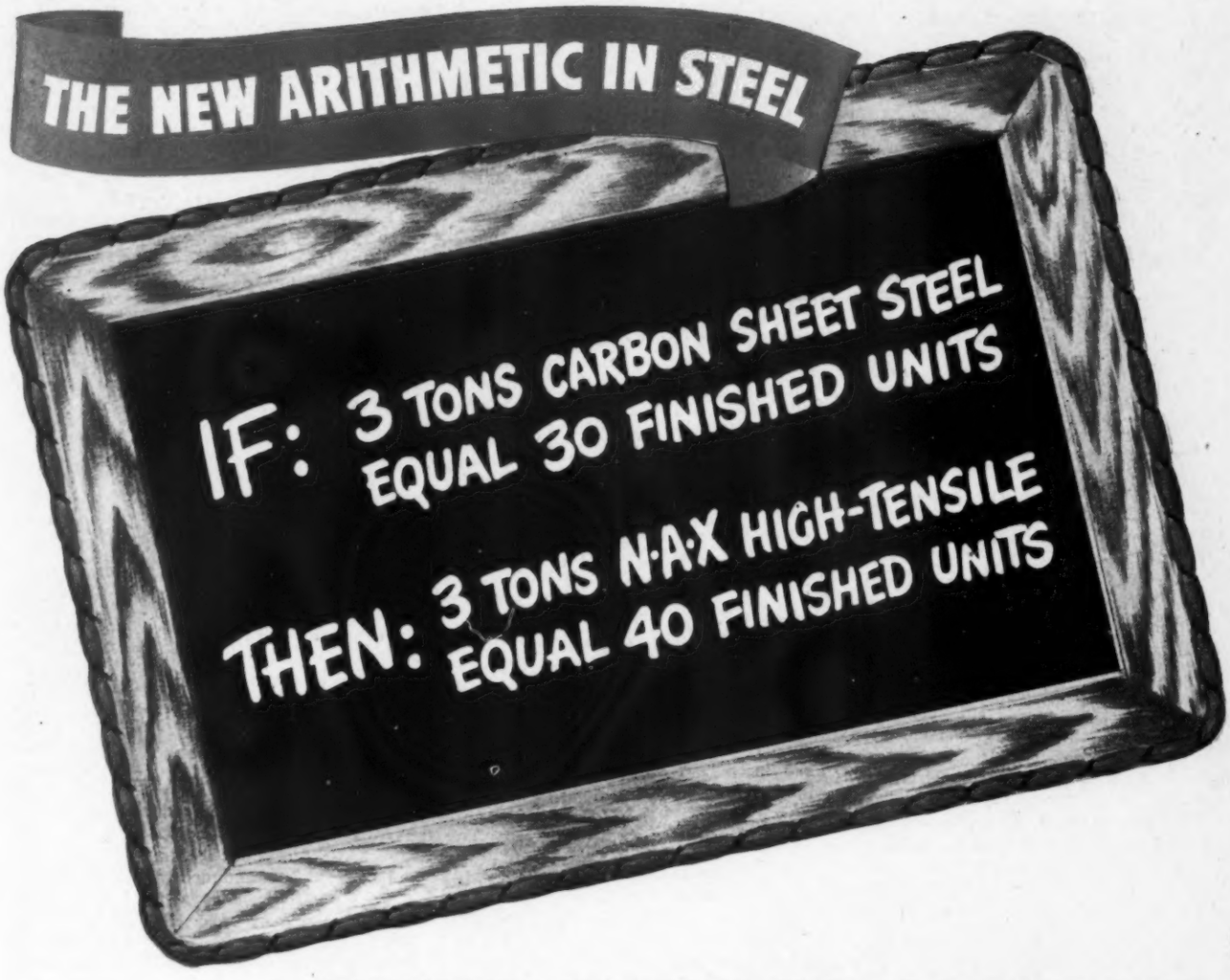
Here it is clear that Russian Communism cannot survive for long by the side of capitalistic countries. The Soviet Union is always engaged in warfare, open or concealed, with the non-Communist States of the world. That is why Stalin is unappeasable. That is why Mr. Roosevelt's and Mr. Willkie's "One World" idea was foredoomed to failure. First formulated by Karl Marx, the Communist economy came to flower in the Russian Revolution following World War I. The essence of it is the exchange of freedom for a government-promised social security. Sad to say, too many people in this country seem to prefer an artificial security even at the cost of freedom. This social revolution has already engulfed most of Europe and is hammering at our gates. It has already greatly modified our economic system. The realities of power have already in large measure passed from the wealthy families and efficient industrialists into the hands of politicians, bureaucrats and labor leaders.

Rufus S. Tucker, Chief Economist for General Motors, says: "It is no accident that the depression after 1929 was the longest in modern history. Yes, we are on the road to serfdom and farther along than most of us realize. It is a down hill road and the further we proceed the faster we travel. It does not lead to a bright future, but circles around the land of darkness from which our ancestors came."

It is plain foolishness to believe that what is going on today is a question of higher wages and higher prices, or lower wages and lower prices. This is a fake issue, for the real battle taking place is the battle for the control of American industry. For the first time in American history, the business men and industrialists are cornered with their backs to the wall as they face not only local and national governments that are definitely against them and concerned only with the votes of labor, but even more important, courts which also are anything but impartial.

There need be no secret as to how these major redistributions of wealth take place. We have only to study the history of one country after another since the end of World War I. The standard method, which is the one being used, is to catch corporations in a vise, by the government on one hand extracting exorbitant taxes, approximately one dollar out of every three in this country, while with the other hand, the government orders corporations to increase labor costs though giving but a fraction of relief in the way of price rises. No greater device for the redistribution of wealth could have been invented than that which went on under the name of O. P. A. This was all foreseen by the father of Communism, Karl Marx, who described almost a century ago how he visualized the funeral of capitalism. The more one studies the events of the last ten years, the better prophet Marx seems to have been. He stated that in the very nature of capitalism there would come a period when there would be such an abundance of capital competing for yields, with enormous overhead expenses and demands on the part of labor and the government for greater control, that finally either labor or the State would take over industry as the profit of capital vanished and it was unable in the end to continue large scale employment. In effect Marx maintained that capital would be caught in a vise and ultimately there would be no profit at all regardless of the volume of business done. Already it is clear that for the year 1946 if you took the five largest corporations in America, corporations noted for their efficiency, they will not make a single cent of net profit if they did not include the large sums

(*Continued on page* 352)



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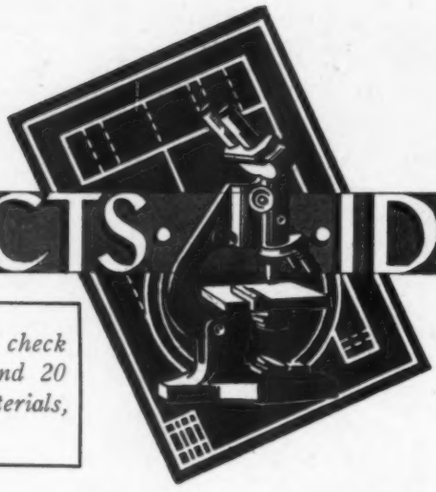
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New PRODUCTS · IDEAS



Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

EXHAUST GAS ANALYZER



SIMPLE, rapid check for improper operating conditions in automobile, airplane and all types of gasoline combustion engines can be made by studying exhaust gas composition and intake manifold vacuum with Ranarex Exhaust Gas Analyzers, according to Permutit Co., New York City. Unit permits mechanic to locate and isolate troubles caused by faulty ignition, timing, incorrect valve operation and carburetion errors. Results of engine adjustments are shown on dial pointer.

RUST, OXIDATION INHIBITED LUBRICANTS

THREE new lubricants have been added to line of Regal Oils, it is announced by Texas Co., 135 E. 42nd St., New York City. They are R&O AZ, suitable for use in hydraulic equipment in sub-zero temperatures, and R&O F and G, for use in mills where rust and oxidation inhibited oils of corresponding viscosity are needed. Oils are said to separate easily from water, not to foam, and to be non-corrosive to bearings.

4-POLE MULTI-BREAKER



FOUR-circuit multi-breaker with both thermal and high speed magnetic tripping action is announced by Switch & Panel Div., Square D Co., Detroit. MO-4 offers assortment of branch circuit capacities of 15, 20 and 30 amps. Two single poles can be converted easily to a double pole for a 2-or 3-wire circuit. Available for flush or surface mounting. It is tamper-proof, is approved by Underwriters' Laboratories, Inc., and meets requirements of the 1946 National Electrical Code.

SINGLE ACTION METAL-FORMING PRESS

SINGLE action metal-forming press with 100-ton capacity is announced by Watson - Stillman Co., Roselle, N. J. Inching control is arranged for die setting. Standard equipment includes 2 radial piston type pumps connected to a 100 hp double end ball bearing motor. Die cushion is optional. Operating speeds are 775 in. per min., advance; 225 in. per min., pressing; 775 in. per min., return.

WELDING GOGGLE

NEW head-rest welding goggle that can be flipped up with one hand for rapid inspection of setups is announced by American Optical Co., Southbridge,



Mass. Goggle is attached by friction joint to adjustable head gear assembly. It has opaque eyecups, may be worn directly over eyes or prescription glasses. Indirect ventilated side-shields provide ventilation, keep out stray light, sparks and metal splashes. Available with Noviweld or Noviweld-Didymium lenses in certain shades.

NEW GRAPHITE TYPE GREASE

NEW graphite type grease developed for use under extremely low temperature conditions primarily for service in rail lubricators manufactured by Maintenance Equipment Co., is announced by the Texas Co., 135 E. 42nd St., New York. Known as Grease 904-W, it is suitable for winter service in northern climates and will give excellent performance at temperatures as low as -50°F.

RECORDING DILATOMETER



AUTOMATIC dilatometer for continuous recording of the thermal expansion and contraction of a wide range of materials, including metals, glass, ceramics and plastics, has been announced by the Electronics Div., Sylvania Electric Products, Inc., 500 Fifth Ave., New York. Unit provides continuous graphic recording of the 12-hr. expansion and contraction cycles of samples. It includes a furnace or sub-zero cooling chamber. It accommodates 3", 4" or 5" specimens; temperatures up to 1000°C. It has automatic shut-off; overall accuracy of 0.2%. Size 56" wide, 50" high, 26" deep. Designed for use at 110-120 volts.

PORTABLE FIRE EXTINGUISHER

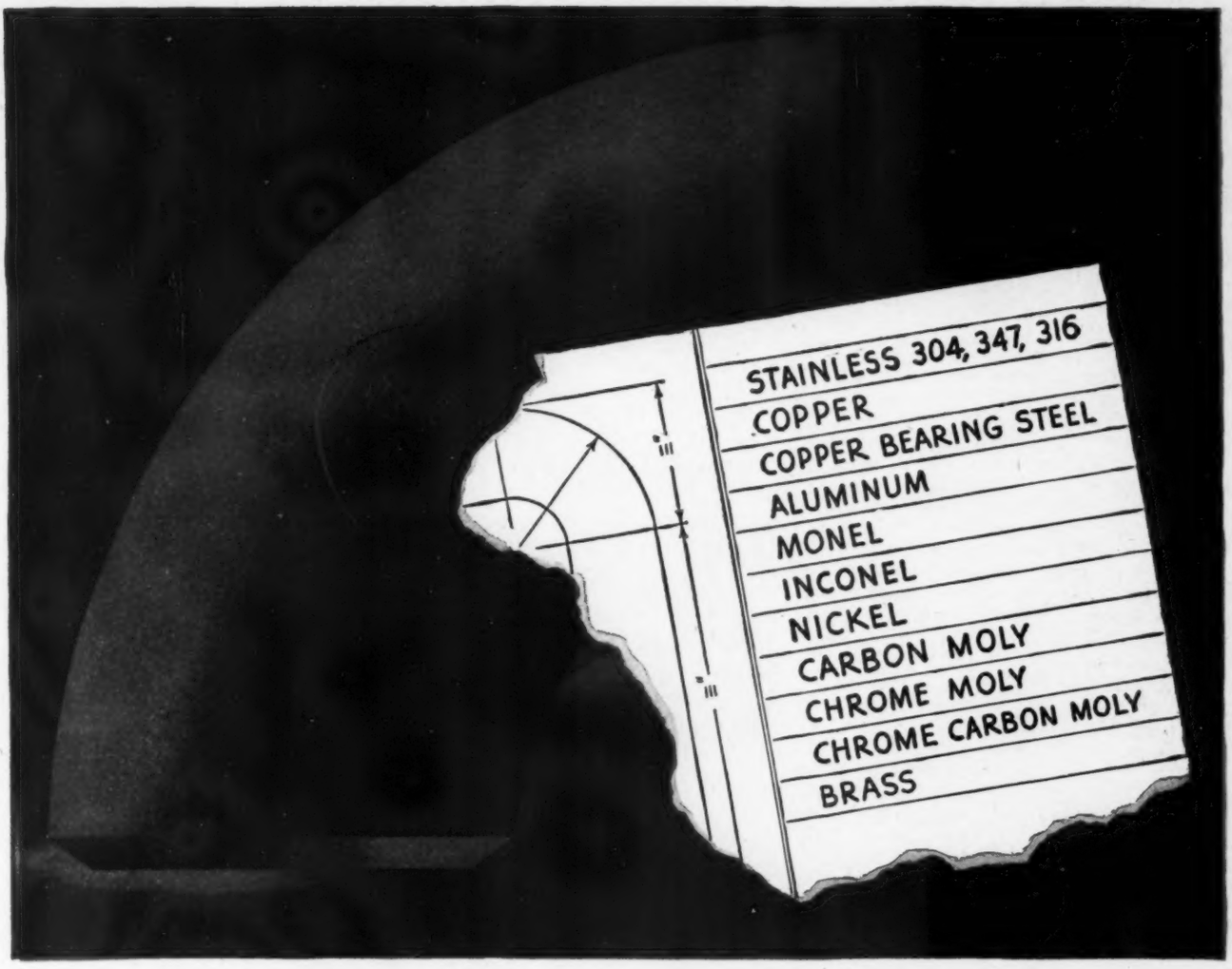
PORTABLE fire extinguisher containing 2½ lbs. of CO_2 in a lightweight cylinder is announced by Walter Kidde & Co., Inc., Belleville, N. J. It combines trigger control valve with reduced cylinder weight to provide easy handling and operation in extinguishing small fires in flammable liquids and electrical equipment. Other hand portables available in 4, 10, 15 and 20 lb. sizes.

ANGULAR STRAIGHT EDGE



AN angular straight edge for scraping and checking of machine ways and slides in machine building, rebuilding and repair work is announced by Machine Products Corp., Detroit Mich. It is made of heat-treated Meehanite in any size from 18" to 82" in length with any specified angle. Two faces are hand scraped. Felt-lined wood case supplied.

(*Continued on page* 150)



Which Alloy?

TUBE-TURN quality-controlled Welding Fittings and Flanges are available in a wide range of metals and sizes to meet virtually every piping need. Practical production and application experience has dictated the engineered development of every fitting design. The selection of each alloy was made only after careful research and close cooperation with alert piping engineers all over the country whose daily problem is to cope with specific conditions of heat, pressure, flow and corrosive attack.

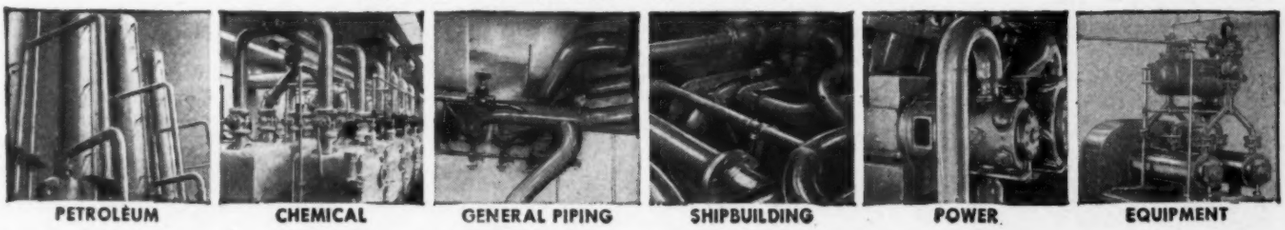
Not just another fitting . . . but one which meets, in every way, the rigid requirements of planned, long-lived systems . . . systems in which every component part plays an important role.

Tube-Turn engineers are ready to work with you and give you the benefit of their wide background of experience in the use and production of welding fittings in all these alloys. For piping permanence in alloy systems, be sure the Welding Fittings and Flanges are trade-marked Tube-Turn.

TUBE TURNS (Inc.) Louisville 1, Kentucky. District Offices: New York, Washington, D. C., Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago, Houston San Francisco, Los Angeles.

TUBE-TURN TRADE MARK **tt** *Welding Fittings and Flanges*

PIPING PERMANENCE SINCE 1927



PETROLEUM CHEMICAL GENERAL PIPING SHIPBUILDING POWER EQUIPMENT

(*Continued from page* 148)

DIESEL ENGINE-DRIVEN ARC WELDER



DIESEL engine-driven arc welder of 300-amp. capacity for use where electric power is not available is announced by Hobart Bros Co., Troy, Ohio. It is powered by a 2-cylinder, unit-injection diesel engine with a 4½" bore, 5" stroke and rating of 47 hp at 1450 rpm. Welding generator is a single operator variable voltage type. It is rated at 300 amps at 40v; current range for welding duty is from 20-40v, 60 to 375 amps. Optional equipment includes pneumatic-tired 4 wheeled trailer.

SULPHURIC ACID PICKLING CONTROL

OAKITE Pickle Control No. 3, a yellowish - brown, free-flowing powder with a density half that of water, for inhibiting hot sulphuric-acid pickling solutions, is announced by Oakite Products, Inc., 54 Thames St., New York 6. It may also be used in mixed sulphuric-hydrochloric baths in which sulphuric acid predominates. Applications cover installations pickling many types of ferrous alloys and castings, hot and cold rolled steel, and where pickling is done prior to plating or phosphate coating or where zinc coatings are stripped. Literature available.

SPEED TOOL KITS



SEVEN lightweight, rugged Hollowell speed tool kits that take the place of over 100 tools are announced by Standard Pressed Steel Co., Schaff Bldg., Philadelphia 2, Pa. They are: "Socket Screw" kit, in 2 handle sizes, with a swivel bit-chuck, that contains keys for driving socket set, cap, Phillips and slotted head screws; "Socket Wrench" kit (illustrated), in 2 handle sizes, with swivel bit-chuck, that contains 6 and 12 point hex sockets from #4 to ½" inclusive; "Auto" kit, in 2 handle sizes, with swivel bit-chuck, that contains auto maintenance tools; and "Home" kit. Kits fit in palm of hand.

HEAVY DUTY PUMPING UNIT

NEW heavy-duty pumping unit with integrally-mounted reduction gear drive is announced by Blackmer Pump Co., Grand Rapids, Mich. Pump is designed on swinging vane (bucket design) principle which makes it self-adjusting for wear. Capacity is 750 gpm at 150 psi discharge pressure. It operates at 225 rpm. Units of similar design with speed variations from 150 to 400 rpm and capacities of 200, 300 and 400 gpm with pressures from 50 to 150 psi for industrial and marine use are planned. Prime mover, either engine or electric motor, is mounted separately, but provision for mounting on common base will be made.

PROTECTIVE PLASTIC CAPS

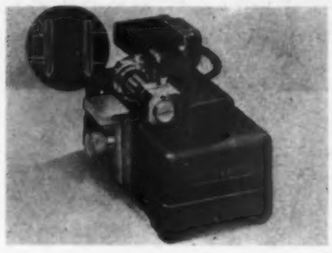


NEW method of processing a plastics material to afford a protective means for a host of industrial products is announced by General Electric plastics divisions. Material has good electrical, physical and chemical properties, is tough, durable, resilient and water-, acid- and alkali-resistant. It is available in form of caps and sleeves, can be used as a protective covering for cable ends, threaded parts of various types of equipment, grips for pliers, wrenches and wire cutters for insulating purposes, etc. It may be incorporated in design of product itself such as covering for busbar insulation, as terminal ends or as electrical or mechanical seal for wires and tubing, etc. Processing requires immersion in dilator solution. When dilated, unit is placed in position on product and allowed to dry. It shrinks to form a tight fit around product, providing protection and insulation.

PERPENDICULAR UNIVERSAL INDICATOR

NEW type of Testmaster Universal Indicator, with the dial perpendicular to the axis, is announced by Federal Products Corp., Providence, R. I. Dial location is said to make this indicator useful for general machine shop, tool room and inspection jobs. Models 5 and 6 (English) are graduated .001" and .0001" respectively. Models 7 and 8 (Metric) in .0025 mm and .01 mm respectively. Available in plastic case with dovetail clamp and toolpost holding bar. Adaptable for jig borers and certain drill press and milling machine applications.

PRODUCTION LEADCHEK



NEW Leadchek with adjustable truncated cylindrical gaging anvils which make possible checking of thread lead within a range of 4½ to 60 threads per inch to an accuracy of .0001" on production parts such as aircraft components, studs, small shafts, etc., is announced by Sheffield Corp., Dayton, Ohio. Available with "tenth" dial indicator or an Electrigage gaging head for lead tolerances as narrow as .0001". Inset shows tapered truncation which permits gaging of various pitches without changing anvils.

FOUR CIRCUIT MULTI-BREAKER

NEW four circuit Multi-breaker with both thermal and high-speed magnetic tripping action is announced by Switch & Panel Div. of Square D Co., Detroit, Mich. It is known as the MO-4, and incorporates the advantage of thermal tripping, which will carry starting and warming up loads of power and lighting circuits, and the fast protection offered by magnetic tripping action when overloads or short circuits occur. It offers branch circuit capacities of 15, 20 and 30 amperes, and is available for flush or surface mounting. The MO-4 is tamper-proof, having been calibrated and sealed at the factory.

CORE-LOSS TESTER



SELF-contained instrument to measure ac permeability and core loss in steel samples is announced by General Electric Co., Schenectady, N. Y. Desk-type unit meets ASTM specifications for measuring core loss and ac permeability at commercial power frequencies and inductions up to 18 kilogausses. It can be supplied with a power pack which holds constant wave shape and frequency, or can be used with a sine wave generator. Cabinet and desk measure 3' 6" long x 3' 2" wide x 5' 8" high.

(*Continued on page* 152)

Measure Your STEEL SCRAP *by the* GOLDEN RULE



THIS is a special appeal to every steel fabricator! The steel industry needs scrap and needs it badly.

Please separate and ship your scrap according to its chemical composition. Let the user know what's in it, just as you expect to know what you're getting when you order new steel. Keep alloy turnings separate from carbon steel. Not only that, but for greatest usefulness to the mills, keep different types of alloy scrap in separate lots.

Greater care on the part of scrap producers will quickly help deliveries of new steel, as it will simplify and speed up use of scrap in the open hearth or electric furnace. All too frequently, for example, scrap scheduled for a carbon heat has to be diverted because of high residual alloy content--production is thereby interfered with and delivery schedules delayed.

So segregate your scrap for better deliveries of the new steel you want from the mills.

QUALITY YOUNGSTOWN SERVICE

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Electrolytic Tin Plate - Coke Tin Plate - Rods - Wire - Cold Drawn Carbon Steel Rounds - Tie Plates and Spikes.



Are you getting these

HIDDEN PROFITS

in the chain you use?

Savings reflected from use of TAYLOR MADE Alloy chain are hidden profits. With twice the strength of ordinary chain you have fewer production delays. TAYLOR MADE'S longer life means less frequent replacement. Its terrific resistance to shock...grain growth and work hardness eliminates periodic heat-treatments—reduces operating and maintenance costs. Investigate TAYLOR today. Call your Mill supply distributor or write the factory direct.

S.G. TAYLOR CHAIN COMPANY
Dept. P11, Box 509, Hammond, Indiana

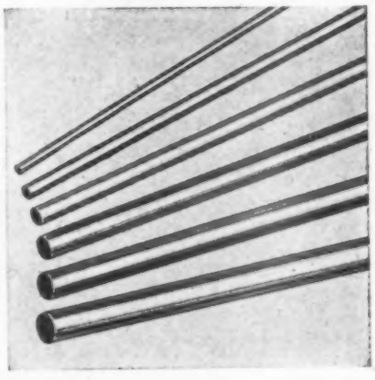
TAYLOR MADE *Chain*

"THE BEST BY TEST SINCE 1873."

BOTTLE LABEL MACHINE GLUE

SEMI-ice proof bottle label machine glue named "Cooler-Proof" is announced by Paisley Products, Inc., 1770 So. Canalport Ave., Chicago, Ill. It is reddish brown in color, odorless, and supplied ready-to-use in the gum pot. It provides tough, flexible glue film that withstands considerable water immersion and resistance to the damp atmosphere of refrigerating units. It may be used on wet bottles. It is available in 55 and 30 gallon drums, and 5 and 1 gallon containers. Excellent performance is reported on all standard labeling machines.

EXTRUDED ROUNDS



LINE of solid Kennametal extruded rounds, available in 2 straight tungsten carbide grades, KE5 and KE7, with a Rockwell hardness of 89.0 and 91.0 respectively, are announced by Kennametal, Inc., Latrobe, Pa. Rounds are recommended as wear-resistant elements suitable for such applications as guides, feeding fingers for automatic machines, rollers, guide rails, laps, etc. Available either rough extruded or centerless ground in diameters of 1/32", 1/16", 3/32", ⅛", 5/32", 3/16", 7/32" and ¼" and in standard lengths in even inches from 1" to 10". Intermediate diameters can be furnished.

NEW-TYPE INDUSTRIAL OIL BURNER

NEW-type industrial oil burner, the Arc-Heat, which produces completely white flame, and is said to effect large savings and increase heating efficiency, is announced by American Heat Corp., Lowell, Mass. Innovations claimed are: (1) rarefaction chamber in which the oil is transformed into a low-viscosity liquid gas and sprayed into fire box, thus developing almost complete combustion; (2) burner relies on induced air in fire box and draws in air at speeds sufficient for proper combustion. No blowers etc., needed; and (3) unit has self-contained modulating valve which restricts amount of fire and therefore amount of oil burned. Recommended uses are for steam boilers, annealing ovens, metal melting, drying sand and other process work.

(*Turn to page* 154)

BESLY TAPS

HELP KEEP SCHWINN-BUILT BICYCLES WHEELING



Under sunny skies, Schwinn-built Bicycles share in vacation fun at Miami-Biltmore Hotel, Miami, Florida.

Above: Schwinn-built ball-bearing cones threaded with Besly Taps.



Profitable Facts For Tap Users

This handy booklet offers useful information on taps and tapping procedures. It's written by shop men for shop men. Tap fits and drill sizes are listed in detail. Write today on your own letterhead for your copy—free.

America's largest bicycle manufacturers, Arnold, Schwinn & Co., Chicago, employ Besly Taps for threading ball-bearing cones and other essential parts of "Schwinn-built" bicycles.

In this and hundreds of other industrial fields, Besly Taps have been relied on for more than half a century. They meet the most exacting specifications for accurate, clean-cut, low-cost threading.

Besly engineers are ready to help you select the right tap for every job. Write today!

BESLY

BESLY TAPS • BESLY TITAN ABRASIVE WHEELS
BESLY GRINDERS AND ACCESSORIES

CHAS. H. BESLY AND COMPANY, 118-124 N. Clinton St., Chicago 6, Ill. • Factory: Beloit, Wis.

HANDLE WON'T SLIP OR PINCH

. . . another Parker Quality Feature!

★



A large size vise handle can cause a nasty pinch. But not with a Parker. A special tension spring and screw in the handle keep it from slipping in any position, yet you can move it easily by hand. Ask your distributor about the five other special features of Parker Vises! The Charles Parker Company, Meriden, Connecticut.

★



See Your Distributor For Full Information

PARKER VISES

America's First Vise Maker

NON-KINKING KOROSEAL CORDAGE 150-200 #TS

KOROSEAL cordage, said to be non-kinking and to have a tensile strength of 150-200 lbs., is announced by B. F. Goodrich Co., Akron, Ohio. It is made with 19 strands of low stretch cord rayon and jacketed with coating of white Koroseal. Other advantages claimed include: resistance to abrasion; withstands clinching or bending pressure; ties and knots same as cotton cord. Available in 50 ft continuous hanks.

FILTERING COOLANT SYSTEM



SELF - contained filtering system designed to remove metal particles from coolants used on machine tools is announced by Inject - A - Flow Pump Co., 67 Willow St., Montclair, N. J. Maker states system can be adapted to the requirements of any machine tool including grinders. System consists of 7 gal. rectangular steel tank in which Strainco strainer unit is mounted. Pump operates inside strainer unit, being connected to motor through an extended shaft. Provision is made for recirculating coolant.

NEOPRENE BONDED POLISHING WHEELS

A SERIES of soft neoprene bonded polishing wheels is announced by the Manhattan Rubber Divn. of Raybestos-Manhattan, Inc., Passaic, N. J. Wheels can be varied over a wide range of densities depending on ultimate application. Combination of porosity and a soft bond results in a wheel which gives superior finishes. Due to nature of the soft bond speed is limited to 3000 sfpm. Wheel is supplied in the finer abrasive grain sizes or with pumice, rottenstone or other mild abrasives. Combination is also effective in blocks and rubbing pads.

32 ALUNDUM ABRASIVE



ALUMINUM oxide product known as 32 Alundum abrasive is announced by Norton Co., Worcester, Mass. Grinding wheels made thereof are said to have a definitely faster and cooler cutting action, longer life, and to require fewer dressings. Superior performance is ascribed to the sharpness of the nubbly surfaced grains which are formed without crushing and screened into standard grain sizes.

COMBINATION INDUCTION, DIELECTRIC HEATER



THER - MONIC M-285C electronic heating generator, a single, dual-purpose unit for both induction (metal) and dielectric (non-metal) heating operations, is announced by Induction Heating Corp., 389 Lafayette St., New York 3, N. Y. Unit is provided with 2 separate interchangeable oscillator sections, one for induction, the other for dielectric heating, and is suitable for use in experimental laboratories, testing depots and development research departments. It operates on 205-245 v, 60-cycle single-phase power supply. Full-load input is 12 kva at 90% power factor, full load output, 285 Btu per min. or about 5kw at nominal frequencies of 375,000 cycles per sec. for induction and 20,000,000 cycles per sec. for dielectric heating.

NEW PREFABRICATED INFRARED OVENS

LINE of "Raymersion" prefabricated infrared ovens for use in low-temperature heating applications is announced by Trumbull Electric Mfg. Co., Woodford Ave., Plainville, Conn. Temperatures as high as 500°F can be obtained, often in seconds, depending on type and mass of products involved. Baking schedules are said to be reduced as much as 90%. Ovens are made up of standard parts, and virtually any size, shape and heat capacity can be constructed. Bulletin 500 available.

SPEED NUTS



NEW line of heat-treated spring steel speed nuts, C7000 series, is announced by Tinnerman Products, Inc., 2050 Fulton Road, Cleveland 13, Ohio. It comprises all the sizes required to fit the ten most popular sizes of machine screws and sheet metal screws. Nuts have been engineered to precision formula based on diameter and strength of screw with which they are to be used. Maker says they are more compact, withstand higher torque tightening, and provide greater tensile strength than flat-type speed nuts previously produced.

(*Turn to page* 156)

FOR TODAY'S TOUGHER JOBS, HERE'S A NEW TOUGHER MOTOR



WHERE IT'S WET Wet weather doesn't bother the new totally-enclosed Tri-Clad motor. Neither do frequent "washdowns" in food plants.



WHERE IT'S CORROSIVE Acids, alkalis, and fumes are kept out of these new Tri-Clads. Cast-iron enclosures are corrosion-resistant, extra strong.



WHERE IT'S DIRTY Dirt and dust can't get into these Tri-Clads to shorten their life. Smooth surfaces are convenient to clean.



WHERE IRON DUST FLIES Harmful iron dust and metal filings can't get past the inner wall. Bearings are protected from dust.



WHERE QUARTERS ARE CLOSE When space is limited for a totally enclosed motor, you'll like these trim, compact new Tri-Clads.

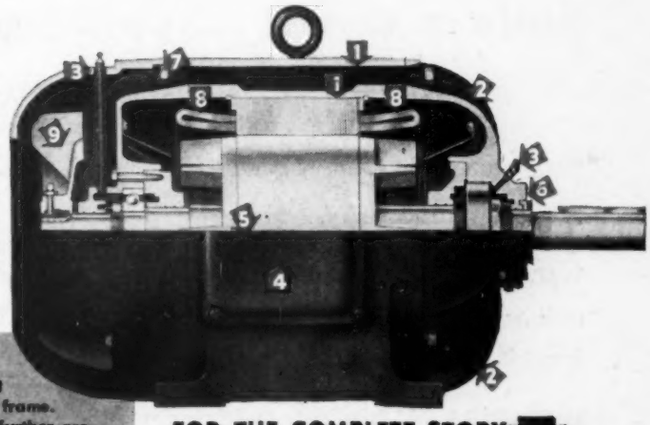


WHERE EXPLOSION HAZARDS EXIST The new Tri-Clad motors are available in explosion-proof constructions where needed.

THE G-E *TRI-CLAD* TOTALLY ENCLOSED MOTOR

(1 TO 1000 HP)

In 1940 you welcomed the Tri-Clad open motor with it's *extra protection features*. More Tri-Clads have since gone into service than any other integral-horsepower motor. Now G.E. is ready with a new line of tough, totally enclosed Tri-Clad motors for use in adverse atmospheres. *We believe they are industry's most dependable motors*. Their longer life and lower maintenance will make them a sound investment on almost every job. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.



10-POINT PROTECTION

1. A cast-iron, double-wall frame completely encloses and protects the windings and punchings.
2. Corrosion-resistant cast-iron end shields are machined to provide a tight seal, and protect the motor from dust, dirt, and moisture. Primer and finish coat of Glyptal* varnish affords high rust-resistance.
3. A pressure-relief greasing system, which can be packed with long-life lubricant, protects the bearings.
4. The cast-iron conduit box is diagonally split for easy wiring. Boxes are independently explosion-proof on Class I motors.
5. Nonshrinking compound around motor leads protects motor interiors from dust and moisture at the point where leads pass through the frame.
6. Rotating labyrinth seal further protects motor interior from damage by foreign matter.
7. Large air passages provide adequate protection from overheating. They're easy to keep clean and open, too.
8. Modern, "ageless" insulation treatment includes windings of *Formex magnet wire.
9. The powerful external fan is removable to simplify maintenance; nonsparking type in explosion-proof motors.
10. Individual dynamic balance of rotors and external fans protects against vibration hazards, even under severe operating conditions.

*Trade-mark Reg. U. S. Pat. Off.

FOR THE COMPLETE STORY

Apparatus Department, Section 750-278C
General Electric Company
Schenectady 5, N. Y.

☐ Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motors.

☐ Please send me GEA-4131, "Motors and Control for Hazardous Locations."

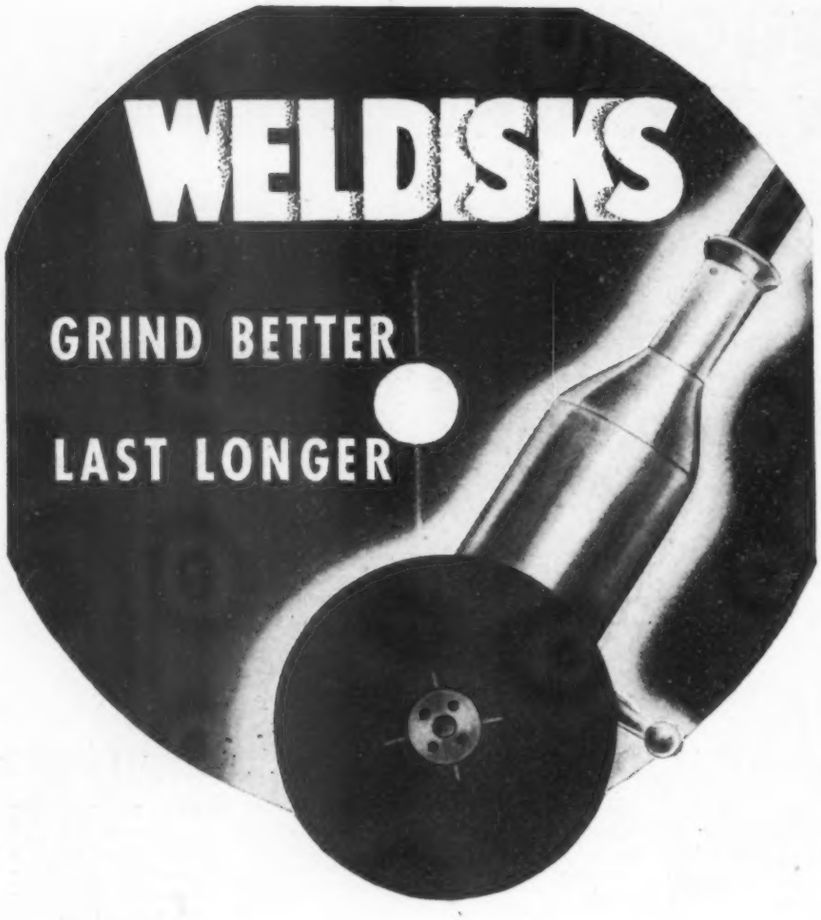
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COMPANY .....

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GENERAL ELECTRIC



Reduce Costs! Avoid Injuries!
Increase Production!

WELDISKS grind better because they lie flat . . . do not soften up . . . do not curl or warp.

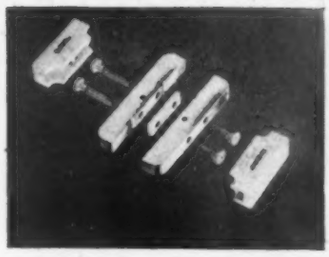
WELDISKS last longer, thereby reducing costs, because, unlike ordinary disks, their amazing cold-setting cement (a scientific formula – not glue or resin) actually improves with age!

WELDISKS avoid breakage and injuries to operators because of their laminated backing of fibre for stiffness plus cloth for strength.

WELDISKS are better disks. Prove it to yourself! Make your next grinding disk order specify WELDISKS – see how this safer disk cuts faster and lasts longer.

Abrasive Products, Inc.
SOUTH BRAINTREE 85, MASSACHUSETTS · MAKERS OF JEWEL COATED ABRASIVES

SNAP GAGE

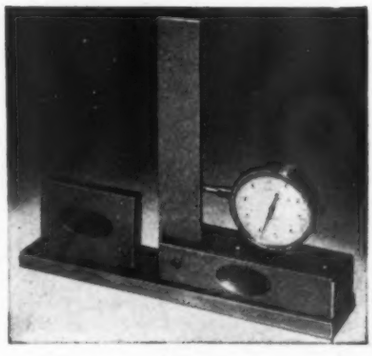


SNAP gage incorporating use of special gage blocks as accurate, non-wearing spacers in working, interchangeable assemblies, is announced by Dearborn Gage Co., 22038 Beach St., Dearborn, Mich. It is known as the Ellstrom "Mastersnap" and consists of special gage block *wrung* between pair of chromium plated alloy-steel jaws and locked in position by brass thumb fasteners. Thermoplastic insulators, green for "Go" combinations and red for "No Go" are fitted over the jaws. Thus special gage blocks are not subjected to wear. Blocks are available in sizes from .050" to 2.000" incl. They may be used separately or in combination.

ALUMINUM ALLOY TRACK JACK

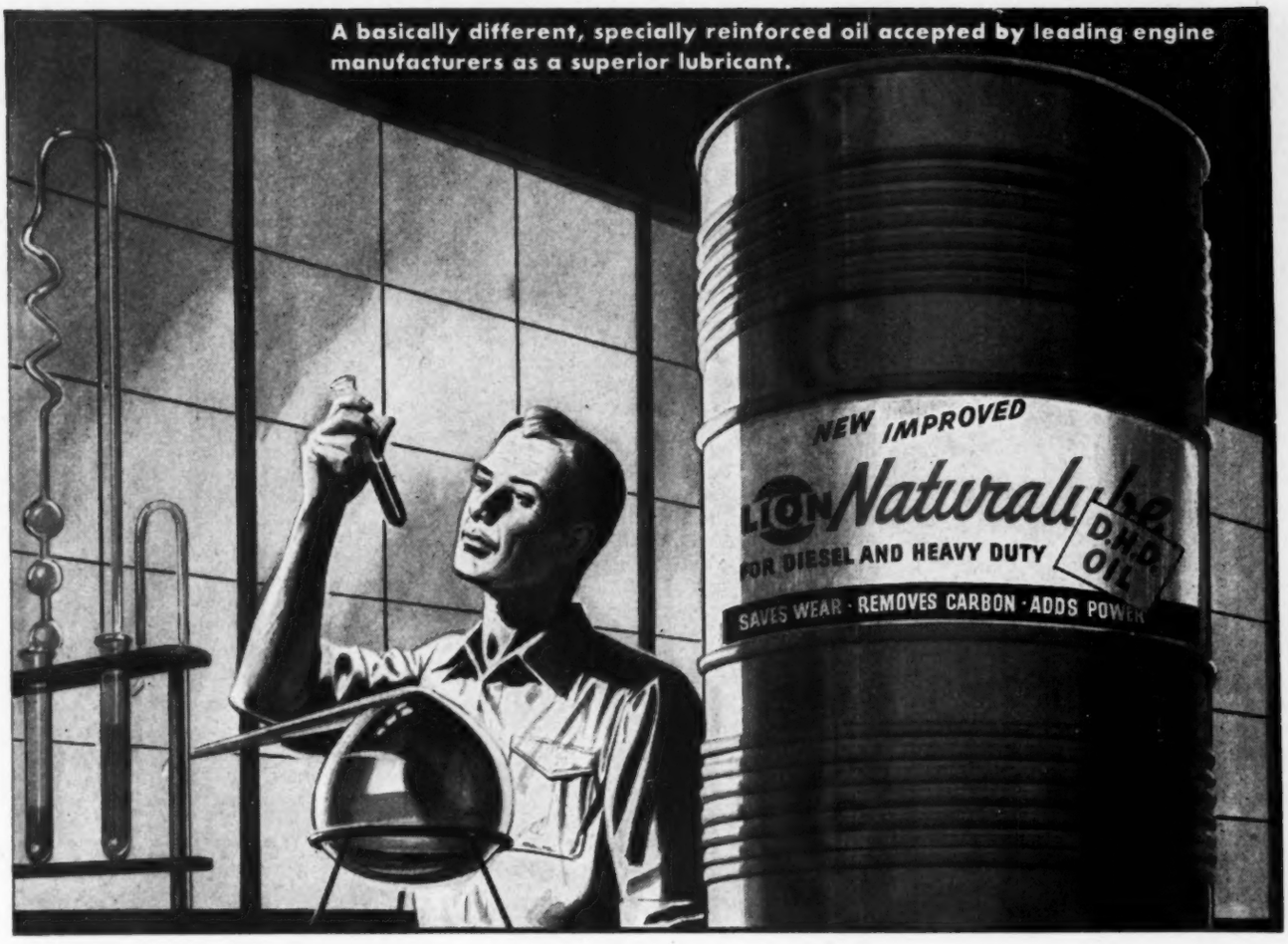
LIGHT WEIGHT rachet type Model 135A track jack with an aluminum alloy frame is announced by Buda Co., Harvey, Ill. Jack weighs 38 lbs., is made in same size and capacity as standard Model 715 track jack. Research tests indicate it withstands compression equal to that of malleable iron jacks, and tests with Class A railroads for past 5 months indicate aluminum-alloy frame casting is standing up as well or better than malleable jacks, according to Buda Company.

ANGLE SQUARE



PRECISION angle square, the "Micro-Sine," for checking right angles and accuracy of work to within 1/10,000" within a given distance is announced by Acro Tool & Die Works, 4554 Broadway, Chicago 40, Ill. It is available with either a standard precision gauge that reads in tenths or with lever indicator reading in thousandths. Comes complete with master checking block and carrying case.

(*Turn to page* 160)



RESISTS SLUDGE FORMATION
REMOVES HARD CARBON
REDUCES WEAR

Nature and science combine to make Naturalube D. H. D. the finest oil you've ever used, for special Lion processing of this basically different crude oil provides extra resistance to the formation of sludge and lacquer—the effects of heat and oxidation.

From Nature, Naturalube D.H.D. gets a tougher protective film... natural solvent properties that enable it to remove hard carbon... greater ability to *penetrate* to all moving parts of an engine and *adhere* to those parts even when engines are idle... and non-corrosiveness.

Ask your local Naturalube distributor about D. H. D. or write direct to Lion Oil Company, El Dorado, Arkansas.

For normal service, where D. H. D. is not required, use Naturalube Motor Oil (not so heavily reinforced).

Naturalube D. H. D. is supported by a positive money-back guarantee of satisfaction. If you don't believe it is the best oil you've ever used, Lion Oil Company will return your money.

LION PETROLEUM PRODUCTS

LION OIL COMPANY EL DORADO ARKANSAS



"The bigger the family—the better the service"

CONTINENTAL CAN COMPANY, INC.

PAPER DIVISION

PAPER DIVISION Headquarters
330 W. 42d St., New York 18, N. Y.

MONO NESTED AND CYLINDRICAL CONTAINERS

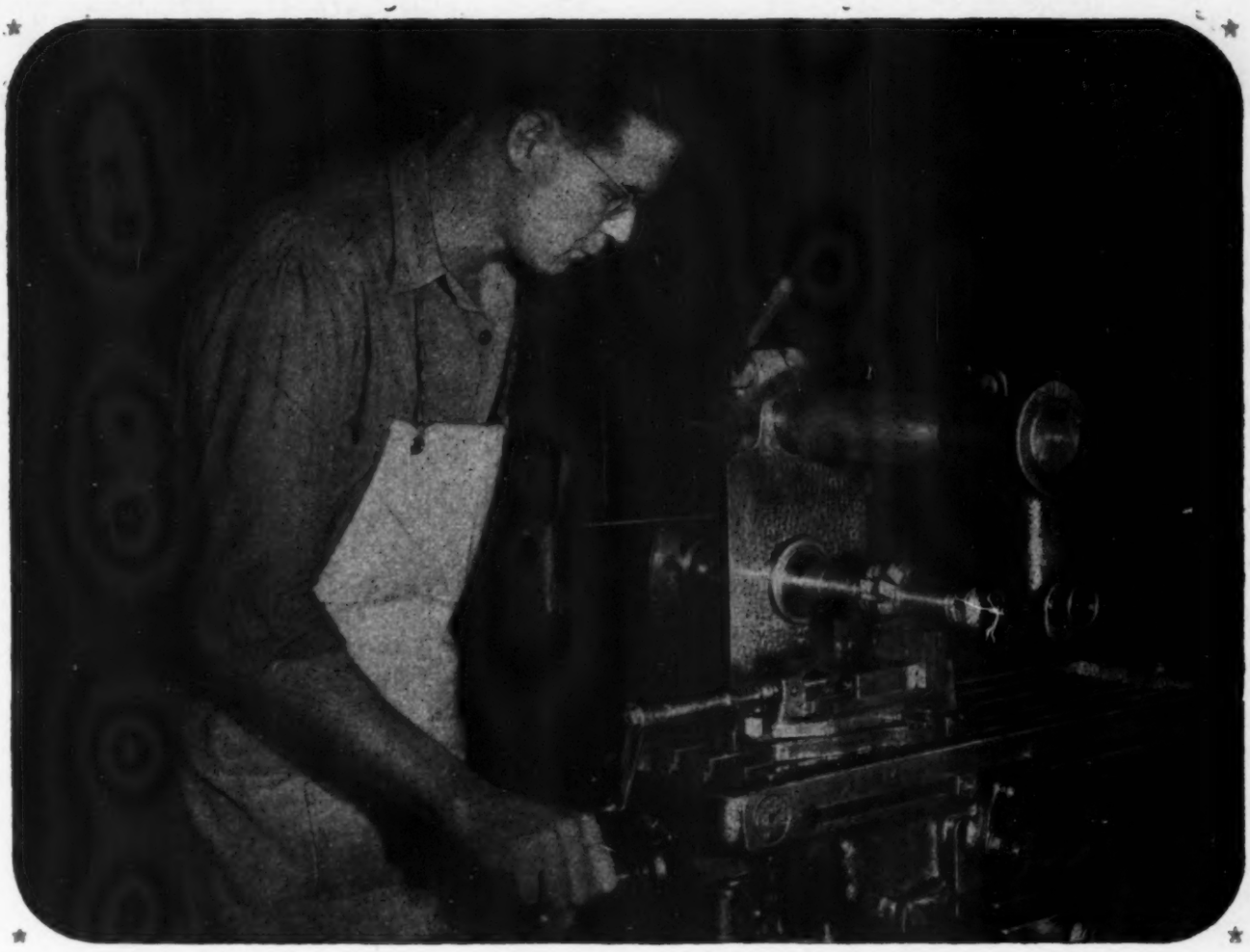
COMBINATION PAPER-AND-METAL CANS

FIBRE DRUMS The Container Co., Van Wert, Ohio

Sales offices in all principal cities

An afternoon "pick-me-up" is quick, sanitary and convenient when packaged in paper containers made by Continental Can Company's Paper Division. These containers come in a variety of sizes and styles for hot drinks, and for hot and cold moist foods.

At the moment, demand exceeds supply. But we're doing our best to uphold our policy—"best in *quality*, best in *service*." And remember, in addition to Mono nested and cylindrical containers, our Paper Division also makes fibre drums, and paper-and-metal cans.



IT'S NOT ONLY *Which* CUTTING MATERIAL

BUT HOW YOU USE IT THAT COUNTS

Send for

THIS LATEST HANDBOOK ON

A-L TOOL STEELS



Complete shop data on the properties, uses, forms, sizes and methods of handling every member of the extensive Allegheny Ludlum family of Tool Steels—170 pages, handily pocket-sized and indexed for easy reference. Write for it today—on your company letterhead, please.

ADDRESS DEPT. P-47

THERE'S hardly a single cutting operation that can't, in some way, be improved. Our record files contain hundreds of instances. Redesign of the tool itself often works wonders. In other cases, a switch of cutting materials shows a marked increase in production, or in pieces between grinds.

That's the job of our Mill Service organization—to work with you for improvement—and the Allegheny Ludlum line now offers you absolutely complete selection. The range extends from Carmet carbide metal blanks and tipped tools—through ALX cast alloy-metal ground bits—to DBL and Super DBL low-tungsten high speed steels, as well as the various high-tungsten and "moly" types of high speed steels. Call us in, any time, anywhere.

AL

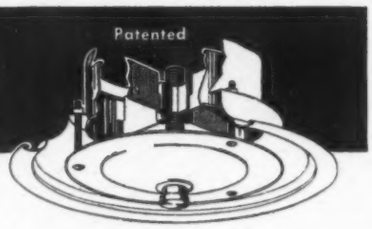
ALLEGHENY LUDLUM

STEEL CORPORATION

General Offices
Pittsburgh 22, Penna.

W&D—371

Adjustable Air Diffusers



For better mixing of room and supply air, more uniform temperature throughout the occupied zone and noiseless air diffusion.

Any desired condition at your fingertips.

Kno-Draft Type K Adjustable Air Diffuser with Type D volume damper

Whether they are used in heating, cooling, ventilating or combined systems, Kno-Draft Adjustable Air Diffusers can be adjusted quickly and accurately for system balancing and individual or seasonal requirements. By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone may be raised or lowered to secure any angle of air direction required. The built-in volume damper (regulated by the hand-turning knob under the diffuser) varies the air outlet aperture uniformly without affecting the outlet velocity of diffusion pattern.

Free handbook: contains clear sketches, charts, dimension charts and instructive text that simplify the selection and installation of air diffusers. Please write Dept. P-4 for your copy, using your company letterhead.

W. B. CONNOR ENGINEERING CORP.

AIR RECOVERY • AIR PURIFICATION • AIR DIFFUSION

114 East 32nd Street — New York 16, N. Y.

ERIE'S Connecting Rod Bolts, made from Round Bars, with Hot-Forged Heads, represent the ultimate in craftsmanship and economy to an Engine Builder who must meet present day competition.

A-4140 and A-4340 steels are generally used, heat treated after forging, with threads Cut or Ground as specified, to Class 3 or 4 Fit.

Leading Engine Builders have placed their confidence in **ERIE** as their source for a critical bolt of this type. Send us your specifications.



ERIE BOLT & NUT CO.

ERIE, PA.

STUDS • BOLTS • NUTS ~ ~ ALLOYS • STAINLESS • CARBON • BRONZE

RAISED HUB DISC WHEELS

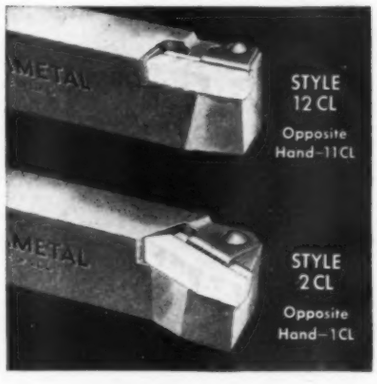


BAYFLEX Raised Hub Disc Wheels are announced by the Bay State Abrasive Products Co., Westboro, Mass. Outwearing abrasive coated discs, they have wide application, especially in the field of welded or brazed metals, and grinding aluminum castings. Edge can be used for grinding and even cutting off. They can be used right down to the nut. They fit any standard machine employing coated discs and are available in the same grit size.

AMPCOLOY NICKEL SILVER ALLOYS

SERIES of alloys made especially for dairy and food processing equipment is announced by Ampco Metal, Inc., Milwaukee 4, Wisc. Known as Ampcoloy nickel-silver, these 4 grades of stainless white alloys have from 20% to 30% nickel with small amounts of tin, manganese, iron and lead, and balance copper. Parts may be produced by sand or centrifugal casting methods; may be finish machined if desired. Alloys are said to be acid- and corrosion-resistant; will not rust. Bulletin 82 available.

CLAMPED-ON-TIP TOOLS



TWO new types of tools having clamped-on, advanceable Kennametal tips for lighter machining jobs are announced by Kennametal, Inc., Latrobe, Pa. Styles 1CL and 2CL have offset shanks and Styles 11CL and 12CL have straight shanks. Features claimed include more consistent performance, greater durability from thermally strain-free assembly, smooth, unimpeded chip flow. Shank serves as permanent tip holder and different grades of tips can be interchanged in same shank. Shank sizes available are: 1" x 1" x 7", 1" x 1¼" x 9", 1" x 1½" x 10". Catalog Supplement 2 available.

(*Turn to page* 162)

GENERAL CHEMICAL
RESEARCH
ANNOUNCES

genetron* 100

first of its
important series of
ALIPHATIC ORGANIC
FLUORINE COMPOUNDS

Long the leader in development of inorganic fluorides and fluoborates, General Chemical Fluorine Research now enters the field of organic chemistry as it presents the *Genetrons* . . . an important series of aliphatic organic fluorine compounds.

First of the group is *Genetron 100*, a product significant not only as a new industrial chemical, but also as the parent compound for this family of commercially valuable organic fluorine derivatives.

Its physical properties point to various applications . . . as a refrigerant; intermediate in the preparation of aerosol dispersants, dielectrics, high pressure lubricants, selective solvents, and mixed olefinic halide monomers. Some of these uses are already being confirmed by manufacturers who recognize the unusual industrial potentialities of this low-boiling organic liquid.

Genetron 100 may merit your thorough investigation, too. For experimental samples write General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y.

genetron* 100

PHYSICAL PROPERTIES

Formula	CH_3CHF_2
Molecular Weight	66.05
Color	Colorless
Melting Point	—117.0° C
Boiling Point	—24.7° C
Density	1.004 at —25° C
Latent heat of vaporization	137 B.t.u./lb.

vapor pressure (p.s.i. abs)

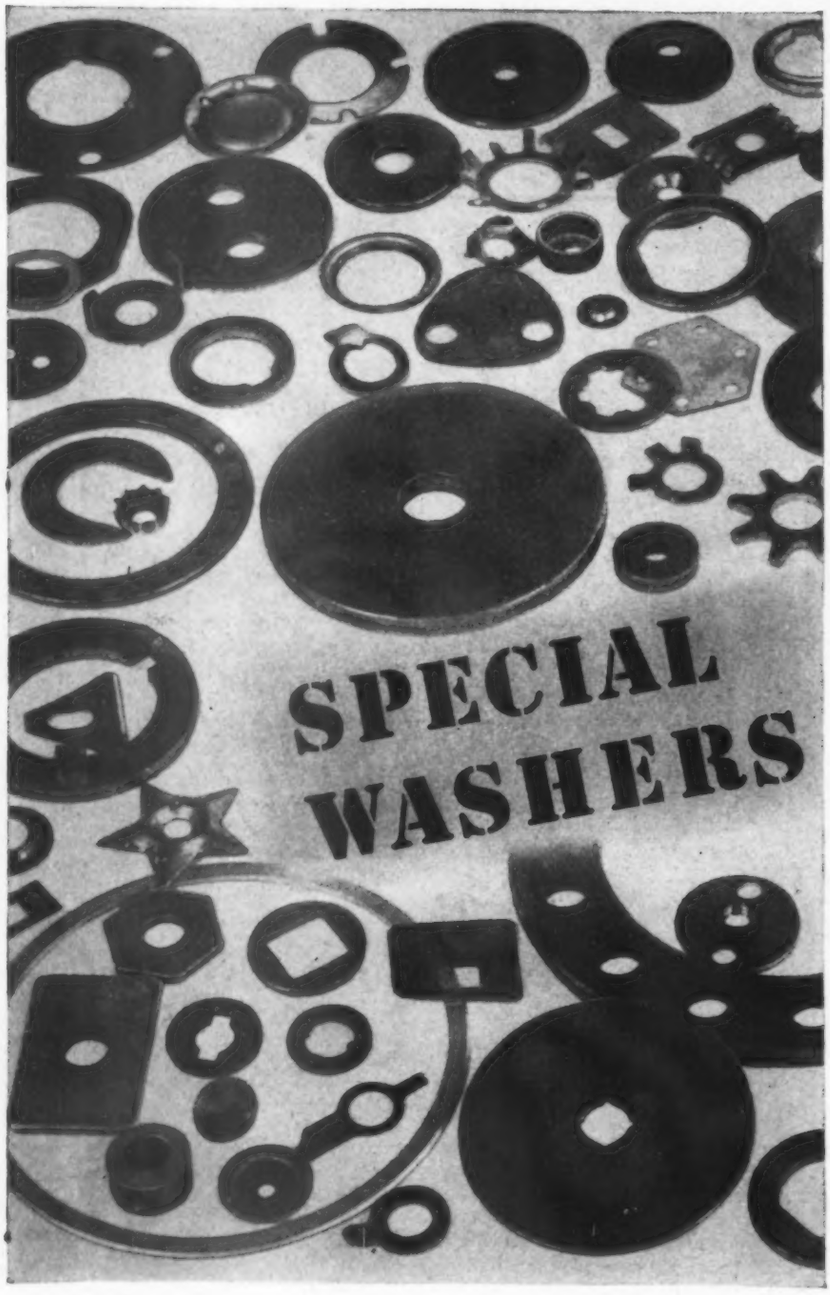
—30° C	12.0
—10° C	25.9
10° C	53.8
30° C	108.0

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Albany • Atlanta • Baltimore Birmingham • Boston • Bridgeport • Buffalo • Charlotte Chicago • Cleveland • Denver • Detroit • Houston • Kansas City Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh Providence • San Francisco • Seattle • St. Louis • Wenatchee Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited Montreal • Toronto • Vancouver

*Trade Mark, General Chemical Company



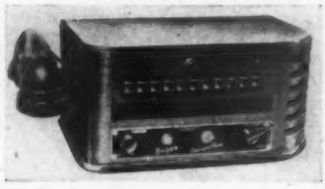
. . . to Your Specifications

Any Size — Any Metal — Any Quantity

For more than a quarter-century we have been specializing in the design and production of Special Washers and Small Stampings. We can place at your disposal more than 10,000 sets of tools—and if none of these meets your requirements, our experienced Tool & Die Department will gladly work to your specifications.

THE MASTER PRODUCTS CO.
6400 PARK AVENUE • CLEVELAND 5, OHIO

INTER-COM UNITS



NEW series of inter-communicating units is announced by David Bogen Co., Inc., 663 Broadway, New York 12, N. Y. "LA" series is for systems employing 1 master and a number of remote stations. Master stations may have earphone for privacy. "LC" series comprises all master systems, providing a number of private simultaneous 2-way conversations between masters. "LS" series provides systems in which a number of masters can operate in conjunction with a number of remotes. Masters can intercommunicate and selectively call remotes. All master units are available with either 10 or 20 selective pushbuttons. Handsets available for "LC" and "LS" series. Operation is for 110v ac.

ODORLESS QUATERNARY AMMONIUM BACTERICIDE

DEVELOPMENT of a new quaternary ammonium compound, said to be 200 times more powerful than phenol yet completely odorless, is announced by Rohm & Haas Co., Philadelphia, Pa. Hyamine 1622 is claimed to have advantage of being stable, non-flammable, nontoxic and non-injurious to fabrics, metals or paint surfaces. It is a white, fluffy, crystalizing powder readily soluble in water. It may be prepared and stored in large quantities without losing effectiveness.

GEAR TESTERS



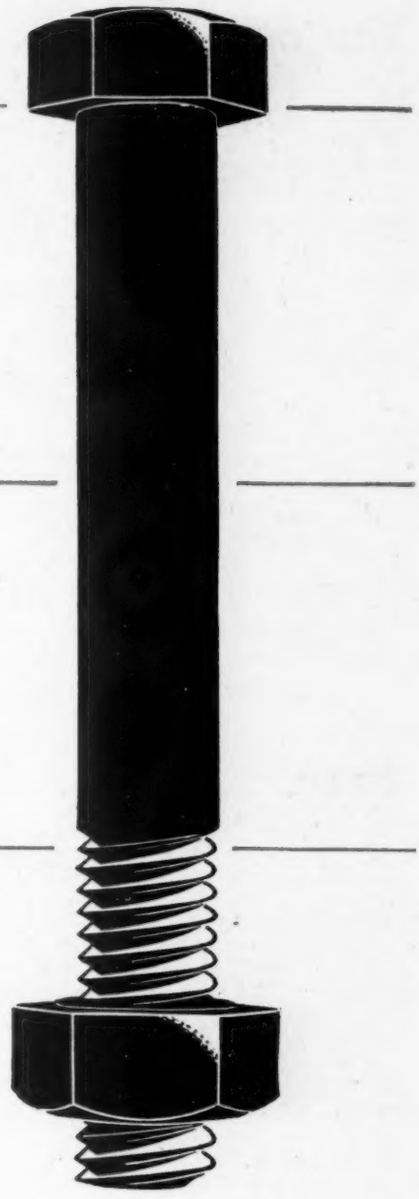
TWO new gear testers with a maximum capacity of 15″ center distance are announced by George Scherr Co., 200 Lafayette St., New York 12. One model is equipped for holding gears or pinions that are cut integral with their shafts or mounted on arbors. Other model (illustrated), designed for testing internal gears, has arrangement for reversing pressure, thus making possible internal and external gear inspection for center distance, run-out, tooth thickness and rolling action. Operation is by handwheel through rack and pinion. Both models have precision scale and oversize vernier for setting to correct center distance.

(*Turn to page* 164)

FULL FORMED HEADS — Always sharp cornered and straight sided — *perfect* wrench fit assured.

STRONG, ROUND SHANKS — Accurate in diameter — slide into bolt holes freely and easily.

CLEAN, SHARP THREADS — Exact for spacing and depth — nuts turn up smoothly without jamming.



UPSON QUALITY MEANS TOP QUALITY

And it's the same top quality—uniform throughout more than 20,000 different headed and threaded items—which means fast assembly and lasting holding power wherever Republic UPSON Quality Products are used.

REPUBLIC STEEL CORPORATION
BOLT AND NUT DIVISION • CLEVELAND 13, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

REPUBLIC *Upson Quality* BOLTS AND NUTS

Other Republic Products include Pipe, Sheets, Tubing, Hot Rolled and Cold Drawn Bars—Carbon, Alloy and Enduro Stainless Steels

You can See Quality IN CESCO SAFETY EQUIPMENT



The gently-resting comfort • bridge on CESCO spectacle goggles is an exclusive quality feature.



CESCO'S acid hood offers, among other outstanding features, Acitex material which resists the 5 most injurious acids.



The contour-molded, snug-fitting eye cups on CESCO goggles — a quality feature contributing greatly to wearer comfort.



The exclusive air-distribution tube in this CESCO welding helmet represents only one of its quality features you can see.

• Look at any CESCO product. In each you'll see features and workmanship that represent Quality.

Like the **comfort • bridge** on CESCO goggles, the texture of the acitex hood, the molded goggle cups, and the engineering details of the *Air-Flow* Helmet—each CESCO product has distinguishing quality features.

CESCO quality starts with the designing of a product. Quality is added during experimental and job-testing periods. And, quality is then manufactured into CESCO equipment through exacting attention to detail and expert workmanship.

Consider CESCO Quality when you buy safety equipment.

CHICAGO EYE SHIELD COMPANY
2320 Warren Boulevard
Chicago 12, Illinois

CESCO
FOR SAFETY

LIGHT, RIGID SPIRAL TUBING

SPIRAL tubing formed from metal strip (steel or non-ferrous) with edges joined in a continuous 4-ply lock-seam, is announced by Pratt Industries, Inc., Frankfort, N. Y. Advantages include light weight, extreme rigidity and low cost. Possible applications include ready-made concrete-forms, mine ventilating shafts, portable irrigation systems, etc. Diameters range from 2″ to 8″ in any length that can be shipped. Literature available.

DECIMATIC DIAL SNAP GAGE



DEMOUNTABLE heads and extension spacers are features of the Decimatic Dial Snap Gage announced by Standard Gage Co., Poughkeepsie, N. Y. Single pair of heads and 4 extension spacers cover range of 4″. Instrument is said to have highly consistent repeatability, to be free from whip and waver of hand, and to be easily set to a master. Smaller sizes may be used in bench stand as a comparator. Using extension spacer, gage is adjustable over a range of 1″. Set of complete gage and 3 extra spacers available in range of 0 to 4″ or 4″ to 8″.

INDUSTRIAL CEMENT PACKAGED IN TUBES

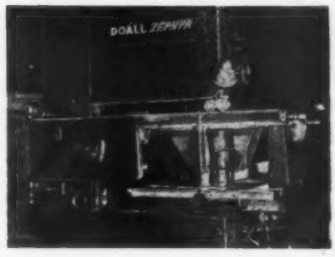
SUBSTANTIAL reduction in quantity of cement used in various assembly operations is claimed when assembly personnel are supplied with small tubes instead of bulk cement. Accordingly, Maas & Waldstein Co., Newark, N. J., now packages 2 water resistant industrial cements, General Purpose Cement #54 and Spot Cement #76, in 2 oz. collapsible tubes as well as larger commercial packages.

BELT CONVEYOR IDLER



REX Roller-Bearing Style No. 55RC Covered Spiral Return Idler, for use under extreme conditions where freezing and ice formation on the rolls or where high abrasive wear is a problem, is announced by Chain Belt Co., Milwaukee, Wisc. Idler consists of a flat-bar steel helical spiral covered with rubber. Spiral has right and left hand sections for centering belt. Extruded rubber snaps over spiral and is easily replaced on job.

RESAW ATTACHMENT

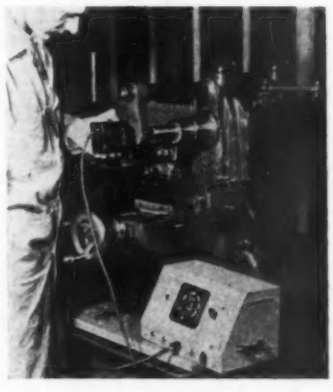


RESAW attachment for use on their Zephyr model 36 is announced by DoAll Co., Minneapolis, Minn. Unit bolts on column of bandsaw, swivels out of way when not in use. Features include positive feeding, vibration dampening, variable speed drive that gives operator complete control over feed rate ranging from 0 to 30 fpm. Resaw takes material up to 12x12 and is electrically driven on 4 feed rollers. Accuracy of attachment is such that variation from absolute squareness in cuts the full capacity of machine is less than .002″. Runout is also less than .002″.

METAL SAWING MADE AUTOMATIC

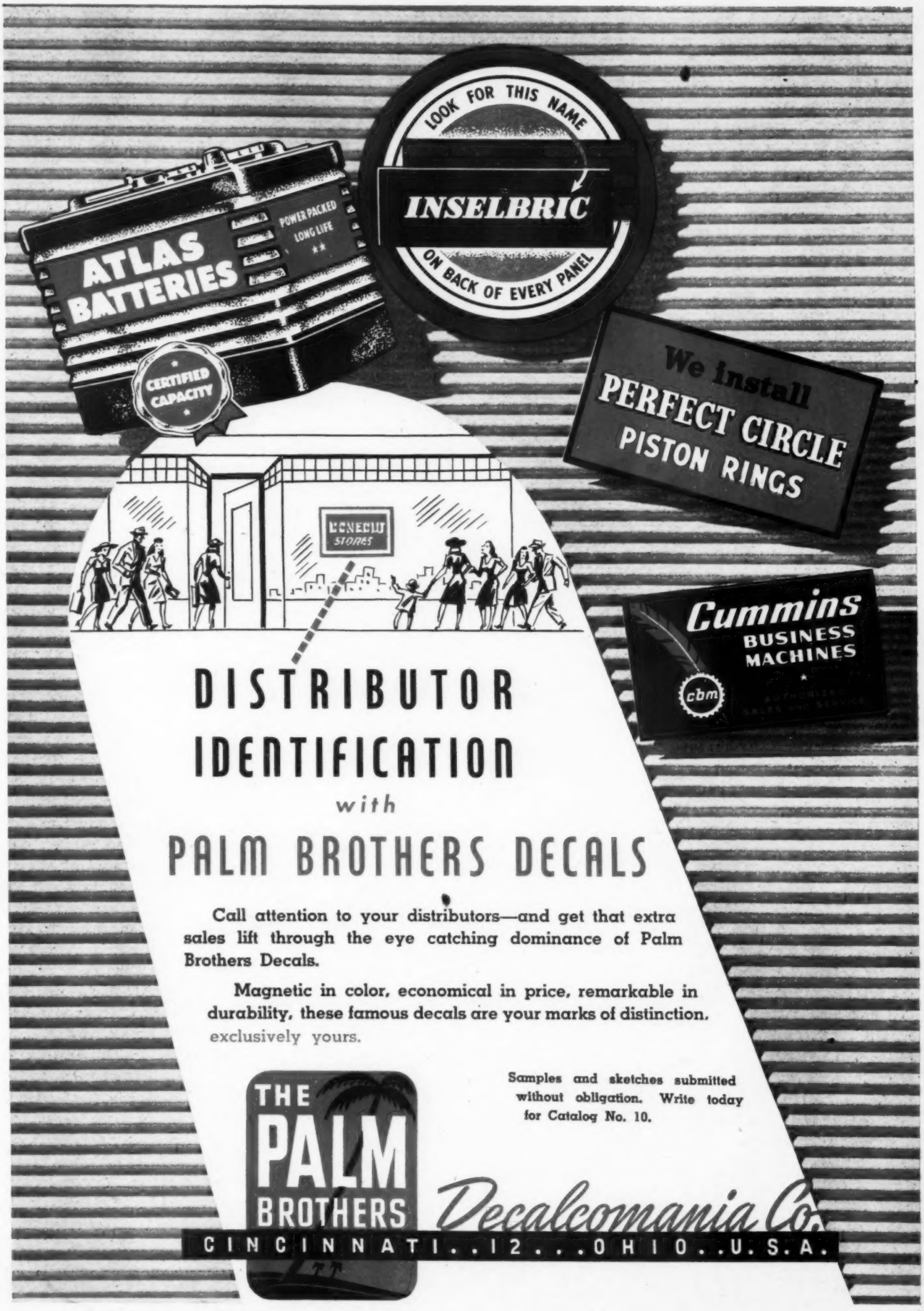
AUTOMATIC pull-up and automatic gauging in lengths from ⅛″ to 48″ are possible with new mechanically controlled power saw announced by Peerless Machine Co., Racine, Wisc. Mechani-Cut Saw automatically saws bar stock, pipe, tubing, heavy billets, etc., which is fed forward within a four-sided saw-frame assembly. Mechanically-controlled conveyor is built for the Mechani-Cut model in 7″ x 7″ and 11″ x 11″ sizes. Bulletin MC-51-A available.

ELECTRONIC TACHOMETER



ELECTRONIC tachometer for measuring rotating speeds from 300 to 50,000 rpm is announced by Special Products Div. of General Electric Co., Schenectady. Instrument weighs 19 lbs., is useful for production testing of equipment instantaneously without necessity of permanent attachments. Recommended to indicate speeds of electric motors, machine tools, automotive and aircraft engines, pumps, fans, blowers and other types of rotating equipment.

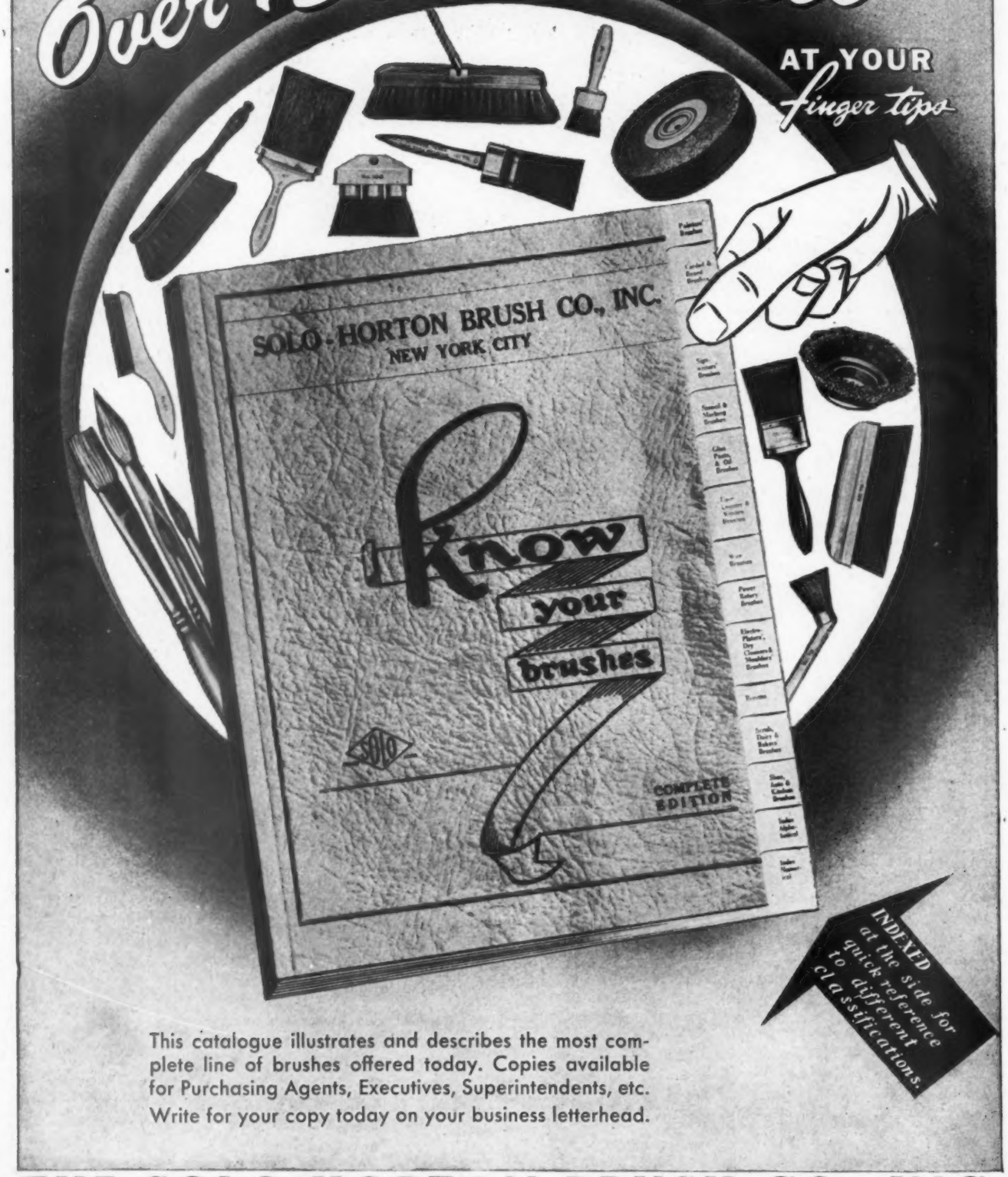
(*Turn to page* 168)


LOOK FOR THIS NAME
INSELBRIC
ON BACK OF EVERY PANEL
ATLAS BATTERIES
POWER PACKED
LONG LIFE
CERTIFIED CAPACITY
We install
PERFECT CIRCLE
PISTON RINGS
STORES
Cummins
BUSINESS
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IDENTIFICATION
with
PALM BROTHERS DECALS
Call attention to your distributors—and get that extra sales lift through the eye catching dominance of Palm Brothers Decals.
Magnetic in color, economical in price, remarkable in durability, these famous decals are your marks of distinction, exclusively yours.
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CINCINNATI..12...OHIO..U.S.A.

for INDUSTRY and FINE ARTS

Over 1500 Brushes

AT YOUR *finger tips*



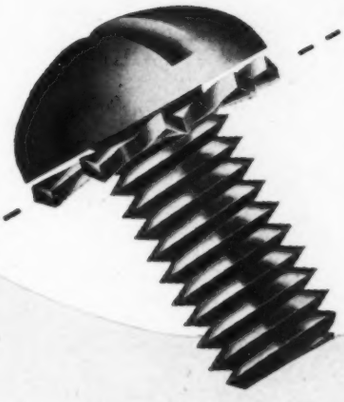
This catalogue illustrates and describes the most complete line of brushes offered today. Copies available for Purchasing Agents, Executives, Superintendents, etc. Write for your copy today on your business letterhead.

THE SOLO-HORTON BRUSH CO., INC.

135 WEST 19TH STREET • Dept. A-1 • NEW YORK 11, N. Y.

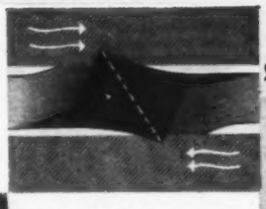
SEMS . . . the cost-saving, pre-assembled washer and screw units

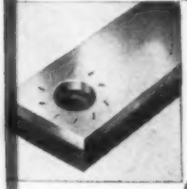
ARE AT THEIR BEST WITH



SHAKEPROOF LOCK WASHERS

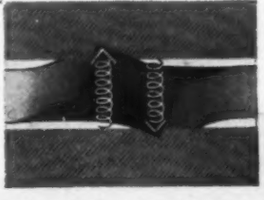
TRUT ACTION. Each pered-twisted tooth ies into both sur- ces, setting up a werful strut-action ich resists any back- rd movement of ew.



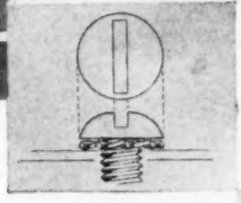


LINE BITE. The exclusive tapered-twisted teeth assure substantial line bite at initial contact. This actually increases under vibration.

RING TENSION. As ration begins when oduct is put into use, ring tension forces teeth to bite deeper—maintaining positive lock.

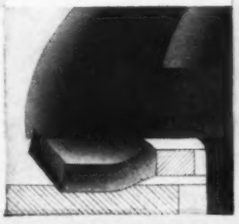


CHECK THESE SHAKEPROOF ADVANTAGES



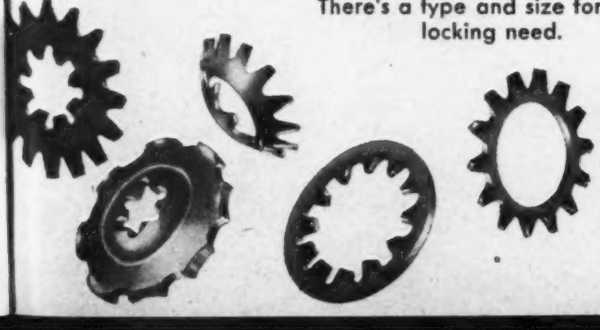
MAXIMUM TOOTH ENGAGEMENT. Shakeproof Lock Washers for SEMS fit closer to screw shank and thus assure maximum tooth contact.

POSITIVE CONCENTRIC SEATING. The Shakeproof Lock Washers used for SEMS hug the screw shank and keep the washer in perfect concentricity; avoids buckling or turning.



You buy the most efficient pre-assembled washer and screw unit obtainable when you order SEMS equipped with Shakeproof Lock Washers for here are all the inherent advantages of SEMS combined with the *ultimate in locking power!* You speed up production, reduce assembly costs and at the same time improve product quality because the multiple tapered-twisted teeth of the Shakeproof Lock Washer actually lock tighter—make the fastening more secure—as vibration increases. Check the advantages illustrated . . . here are five good reasons why you'll want the SEMS you use equipped with Shakeproof Lock Washers. Send for free testing samples today!

There's a type and size for every locking need.



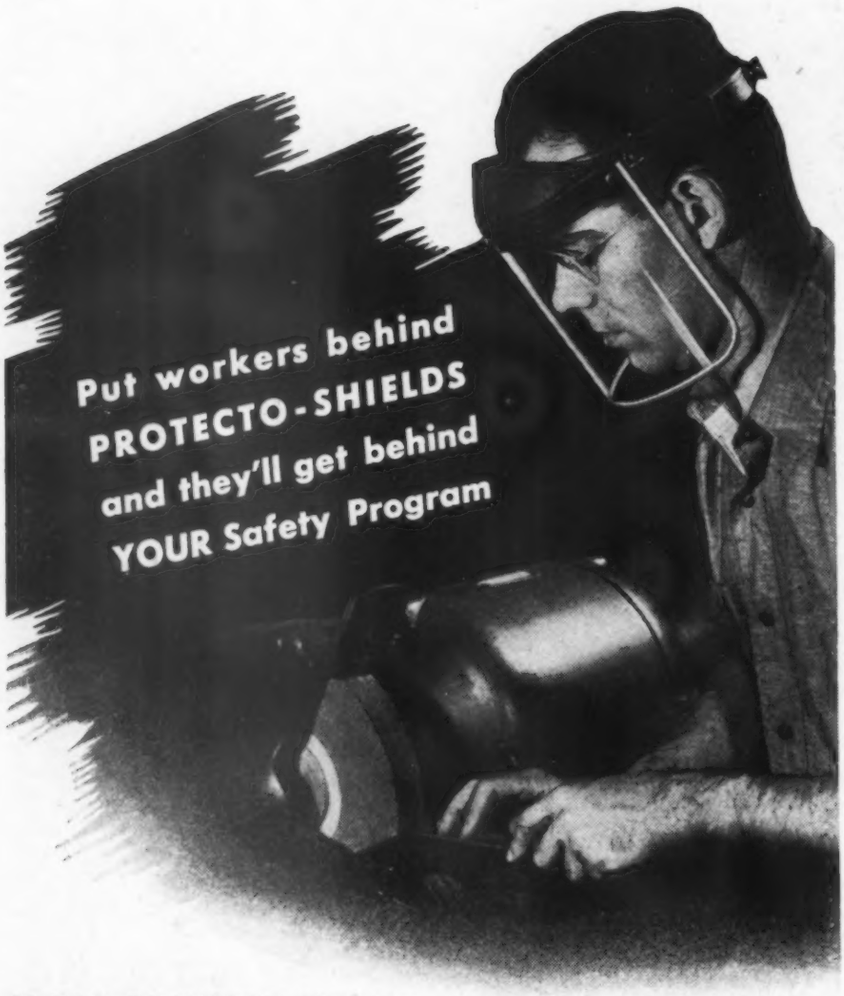
SHAKEPROOF inc.

"fastening Headquarters"

Division of ILLINOIS TOOL WORKS

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2895 E. GRAND BLVD., DETROIT 2, MICH. OFFICES IN OTHER PRINCIPAL CITIES.
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MORE COMFORT MEANS
EASIER ENFORCEMENT OF SAFETY REGULATIONS

The more comfort in the eye protection equipment you buy—the more willingness you'll find among workers to cooperate with your eye safety program.

For light grinding, wood working, spot welding and similar light duty operations, Willson Protecto-Shield* gives adequate protection. At the same time, its light weight, its cushioned headband and full visibility permit wearing all day without fatigue.

The visor, with rigid aluminum binding, is made of clear or Willson Tru-Hue green impact resisting plastic. Slot locks hold the visor securely in place and allow easy replacement. The headband is easily adjustable for all head sizes and a tough fibre guard protects the forehead area.



When not in use, the visor tilts up and "stays put."



Protecto-Shield comes in three lengths: 8", 6" and 4". Also available with side wings for protection against chemical splash.

For help with your eye and respiratory protection problems, get in touch with your Willson distributor or write direct.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS
DOUBLE WILLSON PRODUCTS INCORPORATED
Established 1870
221 WASHINGTON STREET, READING, PA., U. S. A.

*T.M. REG. U. S. PAT. OFF.

OILTIGHT, DUSTPROOF PLUGGING SWITCH



LINE of oiltight and dustproof plugging switches for flange and surface mounting is announced by Control div. of General Electric Co., Schenectady, N. Y. Switches are designed to remove plugging power from a motor at the correct moment, to keep motor from restarting in reverse. Flange-mounted form is used for built-in applications, surface-mounted type for general purpose use. Maximum continuous-rotating speed is 1800 rpm. Two sizes of springs provide for adjustment of contact operating speed over ranges of 40 to 140 rpm and 140 to 750 rpm.

CHEMICAL ALUMINUM FINISHING PROCESS

CHEMOXIDING is name of new process for quickly, easily and economically processing lustrous, glossy finishes on all aluminum and aluminum alloys without paints, enamels or lacquers. Colorings range from light gray through marbelized to light brown. Processing cycle includes degreasing, cleaning, Chemoxiding and rinsing. Technical Processes Division of Colonial Alloys Co., Philadelphia 29, Pa.

VARIABLE CAPACITY ENGINE PUMP

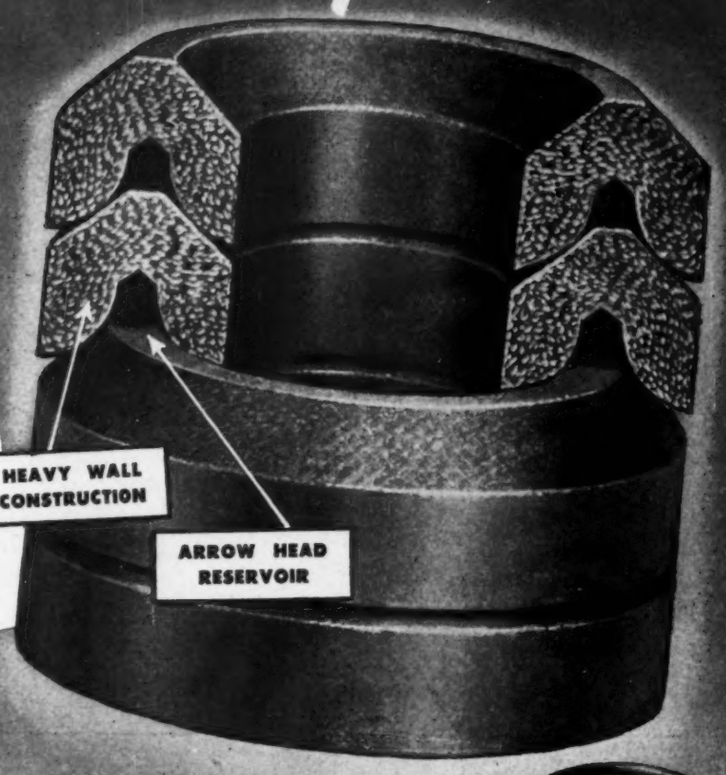


CENTRIFUGAL oil "Enginpump", which permits regulation of flow from 0 gpm to maximum capacity, is announced by Maryland Products Co., 600 Wyndhurst Ave., Baltimore 10, Md. Relief or by-pass valves are unnecessary. It will pump 80 gpm at 40 lbs. pressure with a 5 hp engine and use only 60% of the available engine power. Unit weighs 105 lbs. complete, measures 18" x 19". Optional equipment includes automatic air release mounted on discharge nozzle. Literature available.

(*Turn to page* 170)

PALMETTO *Pyramid*

the most talked about "VEE" type molded packing



...talked about because
IT HAS EVERYTHING!

Packing users all over the country are talking about the new packing that *seals completely* with simple finger-tightening . . . that is *entirely automatic* in performance . . . that *stands up longer* under grueling service!

Here are some of the many features that make PALMETTO PYRAMID worth talking about—*and installing!* Its sealing action is effected by internal pressure...the greater the internal pressure —the tighter the seal. A unique "arrowhead reservoir", which stores and distributes the lubricant . . . plus the unusually heavy wall construction . . . reduces wear and adds to service life.

PALMETTO PYRAMID gives exceptional performance on reciprocating as well as rotating equipment . . . is recommended *without reservation* for a wide variety of services and conditions.

If you are operating hydraulic or pneumatic equipment—under tough conditions—it will pay you to investigate the PALMETTO line of Molded Packings. There's plenty of talk about their performance — because longer, more efficient, more economical service *always* gets talked about! Write *now* for full information on these PALMETTO Molded Packings: PALMETTO *PYRAMID*, PALMETTO *"U-RING"*, PALMETTO *KUP* and PALMETTO *FLANGE*.


PALMETTO *"U-RING"*


PALMETTO *KUP*


PALMETTO *FLANGE*

"It pays to know your PALMETTO Distributor!"

This coupon is for your convenience. Mail it today!

GT-1567

GREENE, TWEED & CO.
New York 66, N .Y.

☐ Send literature on PALMETTO Pyramid and other Molded Packings.

☐ Send PALMETTO representative to discuss packings.

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GREENE, TWEED & CO.
Manufacturers of PALMETTO Packings
BRONX BLVD. AT 238th ST. NEW YORK 66, N. Y.
Plants at New York, N. Y. and North Wales, Pa.

BAN CUTS GREASE!



Simplify your general cleaning jobs by just remembering that vegetable and mineral grease *holds dirt to surfaces,* and that BAN cuts away *both* kinds of grease. BAN leaves cleaned areas spotless and shining —*free of dirt because they're free of grease.*

BAN's swift, sure chemical action takes the drudgery out of cleaning. Dissolve BAN in either soft or hard water, apply with cloth or mop, and rinse off. *That's all there is to your tough cleaning problems!* Use BAN on wood, cement, magnesite, tile, on painted floors and woodwork, on rugs, marble, light bulbs, dishes—and wherever else you want a quick decision over grime. *BAN banishes dirt.*

Write for folder B746J.

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A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS

A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

The Pure Oil Company, U. S. A.

Be sure PURE with Pure

when you want Speed–

when you want power–

. . . in your job of grinding, polishing, buffing, sanding, drilling, reaming, screw-driving or nut-setting, you want a Strand Flexible Shaft machine, because a Strand will do it faster, better, and stand up to it longer.

Strand Flexible Shaft machines provide constant speeds with greater operator convenience. Hundreds of attachments easily interchanged—125 types and sizes—models include vertical and horizontal type machines from ⅛ to 3 h.p. Distributors in all principal cities.

Send today for catalog showing complete line



M-5

Strand FLEXIBLE SHAFTS

N. A. STRAND & CO.

5005 NO. WOLCOTT AVE. CHICAGO 40, ILL.

GROOVING-TOOL BLADE

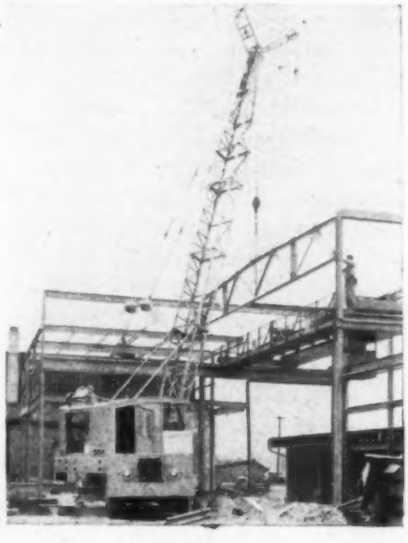


LINE of solid Kennametal grooving-tool blades, said to permit many more regrinds than tools having brazed-on tips, is announced by Kennametal, Inc., Latrobe, Pa. Features include rigidity which minimizes "weaving." Blades are said to have grooved 18,000-20,000 aluminum alloy pistons before regrinding. Standard sizes are ½" high x 2½" long, and ¾" high x 4" long, with a 10° angle on one end, 2° clearance angles on sides. Widths are made to users' specifications + or — .0005".

AIR-DRYING ENAMEL COATINGS

COPRENE enamels, made with a modified synthetic rubber base and said to be chemically resistant, air-drying, high-gloss finishes, are announced by Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J. Recommended for use on steel and most other metals, wood cabinets and furniture, air conditioning equipment, etc. Available in most colors, as well as metallic powders to produce metal-like and beaten metal finishes.

TRUCK CRANE



THIS is new 304 truck crane announced by the Koehring Co., Milwaukee, Wis. Lifting capacity is 40,000 lbs. with outriggers; 15,800 lbs. without outriggers. Both are 85% ratings. Crane is designed for easy handling on street or highway. Booms are available in lengths up to 110'. Jib boom extensions are offered in 15' to 30' sizes. Removable outriggers optional.

(*Turn to page* 172)

Either Way—You Save Time With this Versatile Tool!

Use it as a PORTABLE TOOL!

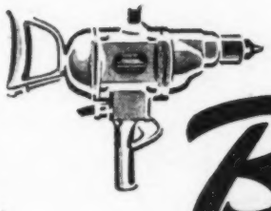
A Black & Decker ½" Heavy-Duty Drill is a rugged, high-powered tool, built for *constant* service in production, maintenance and construction. It drives twist drills up to ½" in steel and all other metals . . . wood augers up to 1" in hardwood . . . Black & Decker Hole Saws for cutting clean, round holes up to 3½" in diameter in any material a hacksaw will cut, a lot faster!





Use it as a DRILL PRESS!

What's more, this ½" Heavy-Duty Drill . . . mounted in a Black & Decker No. 60 Drill Stand . . . makes a powerful drill press combination that drives down costs on your toughest drilling jobs. This Stand has 6-1 leverage to put on the pressure where needed . . . a slow, smooth feed for more precise work. And the same Drill does both portable and stationary work—with power to spare!



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PORTABLE ELECTRIC TOOLS

Ask your nearby Black & Decker Distributor for full details on this time-saving team. For our complete catalog, containing information on over 100 Portable Electric Tools and over 1,000 accessories, write to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Md.



Here's why...

1 **Champion Quality.** Champion **Fluorescent** and *Incandescent* Lamps are made to meet the most exacting industrial service standards—guaranteed to equal or exceed Federal Specifications—backed by one of the oldest and largest lamp producers in the business.

2 **Champion Economy.** Champion Lamp production and industrial distribution is set up to provide minimum lighting cost and lower lamp costs. Sample the service of your local Champion supply house and you'll see why.

3 **Champion Service.** Champion's trained experts are quickly available to supply unbiased recommendations on lighting and lamp applications for every industrial requirement.

Next time try the lamps bearing the Champion diamond mark.

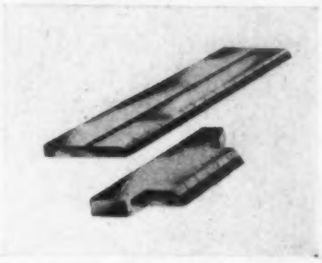


CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

WORK REST BLADE



CARBIDE-tipped work rest blade segmented as shown in illustration, is announced by Scully-Jones & Co., 1901 So. Rockwell St., Chicago. Damage to one or more segment does not require scrapping of blade as it may be returned to factory for segment replacement. The design makes it possible to use a harder, longer-wearing grade of carbide. Segment slots are self-clearing, chips and grit being carried away by coolant.

REPLACEMENT COPPER OXIDE RECTIFIER

UNIVERSAL replacement rectifier, "Coprox" Model CX2E4U, said to offer a multitude of circuit variations, is announced by Bradley Laboratories, Inc., 82 Meadow St., New Haven 10, Conn. In full wave, back-to-back applications, unit is rated at 6 or 12 volts ac, at 5 milliamperes dc; as full wave bridge, 6v ac, 5 milliamperes dc; as half-wave, 6 or 12 v ac at 3 milliamperes dc or 12 v ac at 5 milliamperes dc. As a double half-wave unit, rating is 6v ac for either 3 or 5 milliamperes dc. The 3" flexible leads are color-coded, pre-soldered. Circuit sheet giving schematic data available.

SMALL CAPACITORS

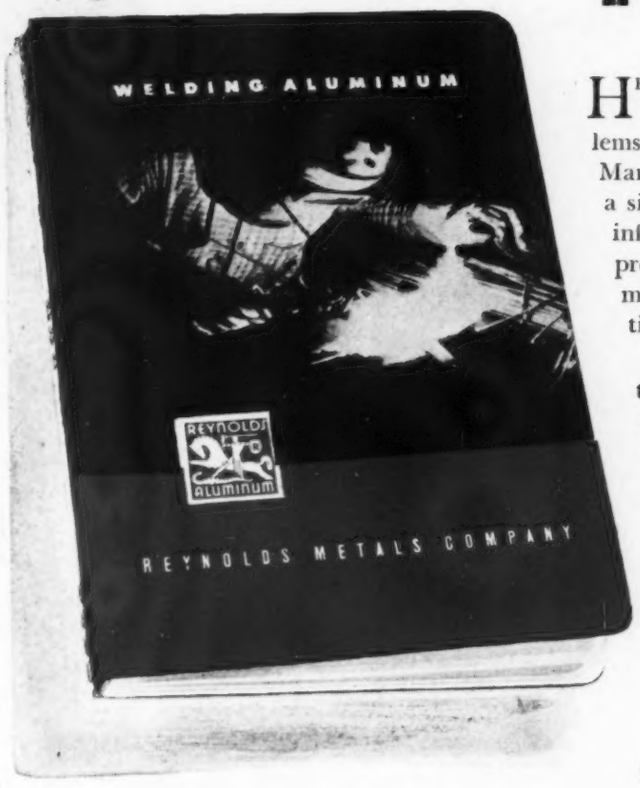


FLAT midget capacitors, Type ZN, are announced by Cornell-Dubilier Electric Corp., So. Plainfield, N. J. The new units are the smallest capacitors made by C-D. They are flat and ideally adapted for circuit applications where space is at a premium. Standard ZN types include units from ¾" length, ¼" width and 3/32" thickness to that of 1" length, ⅝" width and 3/16" thickness. Values range from .0001 mfd. to 0.1 mfd.; D-c rated voltages from 150 to 600 volts.

(*Turn to page* 176)

New! A Handbook on Welding Aluminum

Are you welding aluminum now? Do you plan to weld aluminum in the future? If so, this book is for you!



HERE'S a new up-to-the-minute book, "Welding Aluminum," that presents a concise, authoritative discussion of problems dealing with welding aluminum and aluminum alloys. Many new war-developed applications are described. Under a single cover, in handy usable form, you will find detailed information on 11 aluminum welding processes, from edge preparation to finishing, a comprehensive discussion of aluminum alloys and tempers, and helpful tables on properties, gauges, sizes, and strengths.

"Welding Aluminum" is clearly illustrated with 44 interesting photographs and graphs of welding operations. If you work with aluminum, you'll find "Welding Aluminum", prepared by the technical staff of the Reynolds Metals Company, an invaluable reference book.

How do you get your copy? Simply fill out the coupon on this page and mail with your check or money order for one dollar, to cover the cost of printing and mailing, to Reynolds Metals Company, 2500 South Third Street, Louisville 1, Kentucky.

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- Metal-Arc Welding
- Carbon-Arc Welding
- Atomic-Hydrogen Arc Welding
- Inert-Gas-Shielded Welding

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( ) Please send me a Reynolds Weight Calculator. I enclose 50 cents.

PLEASE PRINT OR TYPE CAREFULLY

There is *More Usable Abrasive* in 32 Alundum Grinding Wheels

ALUMINUM oxide abrasives of the so-called "regular" type are about 95% abrasive and 5% impurities in the form of slag. Slag does not cut. Aluminum oxide abrasives of the "white" type are over 99% pure abrasive but contain a large percentage of pores. Pores do no cutting.

32 ALUNDUM abrasive has a purity of over 99% and no slag, no pores — it's all *usable* abrasive. This means that the many cutting points on the grains of 32 ALUNDUM have more resistance to dulling. And when they finally become dull the slight impurities present in 32 ALUNDUM abrasive are beneficial inasmuch as they give the grains a desirable type of fracture — producing further cutting points.

It is this slower dulling action of the points, plus the fact that here are more of them doing the work, which give the new 32 ALUNDUM grinding wheels their long life and freedom from dressing.

NORTON COMPANY, WORCESTER 6, MASS.

Distributors in All Principal Cities



NORTON ABRASIVES

Trade mark reg. U. S. Pat. Off.

Ask your Norton abrasive engineer to give you a Vectograph demonstration of 32 ALUNDUM abrasive.

W-1077B

TOOL GRINDING

"Fastest and coolest cutting wheel we ever had."

That is what the tool room man of a large plant said after trying a 32 ALUNDUM wheel. They had always found a certain 46 grit, K grade wheel best for cutters, reamers and end mills. But by changing to a 32A54-K5VBE they found that stock was removed faster with a much improved finish. The "32" wheel also held corner better and cut cooler, leaving the tools a nice, bright finish.

TOOL GRINDING

Six times around a 10" cutter without dressing.

A high speed steel 10" diameter milling cutter with 18 inserted teeth each 3/8" x 1 5/8" was ground with a standard 46 grit, K grade wheel taking off .002" each pass for two revolutions. On the second revolution the last two or three teeth were burned a bright blue. On the third revolution, also taking off .002" all the teeth blued and the wheel showed a distinct glaze of steel.

With a 32 ALUNDUM wheel of the same grain and grade (32A46-K5VBE) .002" was removed from the teeth for each of six revolutions of the cutter. There was no burn and no wheel loading.

Almost Unbelievable

ARE MANY OF THE REPORTS THAT ARE COMING IN ABOUT *32* Alundum

INTERNAL GRINDING

Hole taper eliminated — wheel life tripled.

A maker of rayon pumps is grinding holes in a part made of high carbon, high chrome steel (SAE 51335 — Rockwell C56-57) removing .012" from each hole. They had tried many makes of wheels and the best life was an average of 10 holes per wheel. They changed to 32 ALUNDUM wheels (3/8 x 3/8 x 1/8"—32A801-N8VBE) and life jumped to an average of 30 holes per wheel. They say, "The 32 ALUNDUM wheel breaks down only .002" per hole. Not only is this less than anything we have used before but the wheels remain true so that we can get a straight hole without any taper."

SURFACE GRINDING

Difficult job done in half the time with better finish.

A machine tool maker was having a difficult time grinding flat a cast iron core plate (35% steel scrap) because the many grooves and holes in it caused a rapid dulling action of the wheel. Changing to a 32 ALUNDUM wheel (32A36-G12VBEP — 20 x 6 x 10") solved the problem. It easily removes .020 — .030" of stock between dressings compared to .010" for previous wheel. The "32" wheel can feed .002" per pass as against .001" and requires much less sparking-out time. Grinding time for both sides of the core plate went from 35 to 40 minutes down to 20 minutes. Finish was better than any obtainable before.

PORTABLE GRINDER

Wheel cost cut 60%

For grinding welds and steel castings with a portable grinder, a manufacturer changed to a 32 ALUNDUM cup wheel (32A161-R4B5). Wheel life was increased three times with good cut and finish. Wheel cost per day dropped from $3.38 to $1.29.

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Long-Lasting Protection for

HEAVY TRAFFIC floors

FOR LESS THAN 6¢ per Sq. Ft.



Rubberlike, the modern composition floor runner, provides positive protection for heavy traffic areas at less than 6c per square foot — a fraction of what most mattings cost. Its sturdy corrugations cushion and quiet footsteps. Skidproof even when wet, Rubberlike makes slippery floors safe to walk on. Hugs any surface without cementing — won't curl at edges. Cuts cleaning costs . . . lasts and lasts under tough treatment on floors in factories, offices, schools, hotels, institutions. In rolls 27 in. by 100 ft. or 36 in. by 75 ft. Order from supply house or write for free sample to Bird & Son, inc., Dept. 911, East Walpole, Mass.

BIRD Rubberlike PRODUCTS Est. 1795

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BIRD & SON, inc., EAST WALPOLE, MASS. NEW YORK SHREVEPORT, LA. CHICAGO



Best!

FOR LIGHT DUTY

Speed!

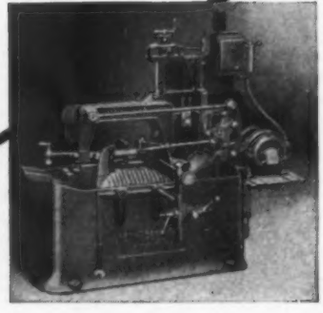
High Speed at Low Cost
No. 4B

For tool room, stock room, or maintenance shop, this 6" x 6" capacity hack saw is superior to anything in its price class. Embodies similar design principles and features of MARVEL Heavy Duty production saws. Cuts a 2" standard pipe in 30 seconds—a 5" round piece of machine steel in 3 minutes!

MARVEL SAWS

2-Speed and 4-Speed

For applications where materials of different hardnesses and alloy characteristics are to be cut, MARVEL 4B is available in 2-Speed and 4-Speed models. Built-in work tracks for holding outer end of bars are also available for all models.



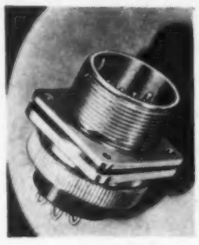
Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course.)

ARMSTRONG-BLUM MFG. CO.

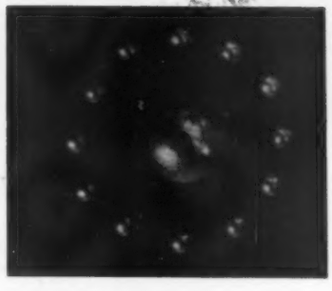
5700 W. Bloomingdale Ave., Chicago 39, Illinois, U.S.A.

CONNECTOR WITH BUILT-IN CAPACITORS



NEW type of connector, with built-in tublar ceramic capacitors, for use in radio, radar and other electronic devices, is announced by H. H. Buggie & Co., Toledo, Ohio. It is available in either pressurized water-tight or non-pressurized types. Pressurized water-tight units are pressure tested at 30 psi. The by-pass feature is such that currents of undesired frequencies are filtered from leads. Unit is available with various AN pin arrangements as ell aws special pin arrangements to meet other specifications.

TUNGSTEN CARBIDE BALLS



PRECISION balls of tungsten carbide, in any size and with any desired degree of dimensional accuracy, are announced by Industrial Tectonics, Ann Arbor, Mich. They are recommended for burnishing and polishing operations, for use in check valves, particularly for pumping equipment, for special bearings and anti-friction mountings. Available with holes to permit attachment of wires and cables such as for tube drawing and bending equipment. Special sizes in small quantities if required.

EXPANDING ARBOR



AUTO-ARB is name of an expanding arbor for use on secondary operations where work-piece is held by the inside diameter. It is claimed to speed certain machining processes. Design permits chucking and unchucking work-piece without stopping spindle when used on screw machine or lathe with standard collet. May also be used on drill presses or milling machines with collet devices. Available in sizes from ⅜" to 1" at 1/64" intervals. Other sizes to special order. Literature available from Asco Corp., Cleveland, Ohio.

(*Turn to page* 178)

NATIONAL REAMERS



The Importance of Proper Selection

In choosing reamers, such factors as the materials to be reamed, the amount of stock to be removed, and the degree of accuracy and finish required should receive primary consideration. NATIONAL Reamers include such varied types as Taper Reamers, Chucking Reamers, and Shell Reamers, to mention only a few, each designed for a specific use.

Your NATIONAL Distributor can help you select the Reamer best suited to your needs. Consult him on all your metal-cutting problems.



Call Your

DISTRIBUTOR!

Leading distributors in every section of the country have stocks of National Cutting Tools. Every National distributor offers factory-trained engineers to serve you. Call your National distributor for cutting tools or any staple industrial product.

NATIONAL

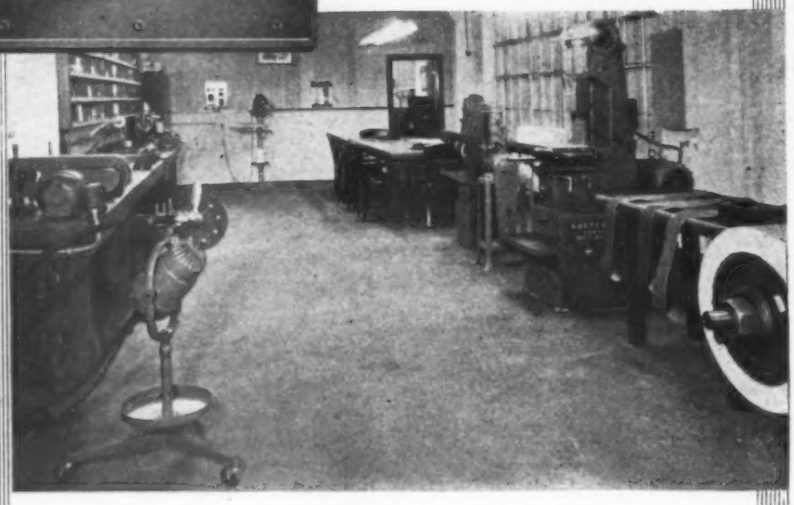
NATIONAL TWIST DRILL & TOOL ROCHESTER, MICH. U.S.A.

TWIST DRILL AND TOOL COMPANY

ROCHESTER, MICH., U.S.A.



LAB-TEST YOUR TOOL-UPS . . . *LOCALLY!*



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TROY

Abrasive engineering, to effectively increase man-hour production must include the recommendation and demonstration of abrasive equipment as well as the abrasive itself. To this end, Behr-Manning has pioneered a new abrasive engineering service — branch-located methods and equipment demonstration rooms—for lab-testing tool-ups, locally.

Inaugurated last winter, this service has been recently augmented by the opening of additional demonstration rooms at our branches in New York, Philadelphia and Cincinnati.

May we suggest that you too may find this service helpful in either improving some present abrasive operation or in simplifying some non-abrasive method through conversion to abrasives. Write or phone our nearest branch or write for booklet, "Your New Laboratory, Sir."

BEHR-MANNING
(Division of Norton Company)
TROY, N. Y.
QUALITY COATED ABRASIVES SINCE 1872

BLAST CLEANER



VACU-Blaster is name of blast-cleaning device for cleaning or refinishing metal, concrete, or other hard surfaces, announced by the Vacu-Blast Co., 1054 Broadway, Burlingame, Calif. Vacuum return systems prevents escape of abrasives or other particles into the open. Many types of abrasives may be used. Blast is controlled by switch at the gun. System operates continuously returning grit and refuse to the reclaiming tank where re-usable grit is returned to system, dust and refuse being shunted into collector.

MACHINE CENTERS



ILLUSTRATION shows line of machine centers announced by the Black Drill Co., Cleveland, Ohio. Set consists of single shank and assortment of six noses which thread into the shaft. Noses are of finest high speed steel heat treated to 65 Rockwell. Centers are made in range of sizes No. 2 to No. 12 for lathes and grinders, with Morse, Brown and Sharp and Jarno tapers and with straight shanks for screw machines.

BENCH-TYPE ELECTRONIC INDUCTION SOLDERING UNIT



LOW-powered, bench-type electronic induction heating unit for production soldering of small metal parts and assemblies is announced by Marion Electrical Instrument Co., Manchester, Conn. Unit operates on 775 watts at full load. 100 watts on standby, weighs 150 lbs. Features include speed, controllability, cleaner work and economical and safety factors. May be operated by inexperienced help. Literature available.

(*Turn to page* 180)

non-stop production cuts costs...

when you use

Wyckoff

HEAT TREATED
COLD FINISHED STEEL



Non-stop production . . . from bar stock direct to finished product without interruption for heat treating, cleaning or straightening . . . is the cost-cutting method you follow when you use Wyckoff Heat Treated Cold Finished Steel.

Heat Treated at the mill to your individual requirements, Wyckoff Steel provides you with *controlled* uniformity of physical properties in *your* production bar stock. Your parts production becomes a direct machining operation . . . individual testing of finished parts is eliminated . . . and you save several operations in the processing.

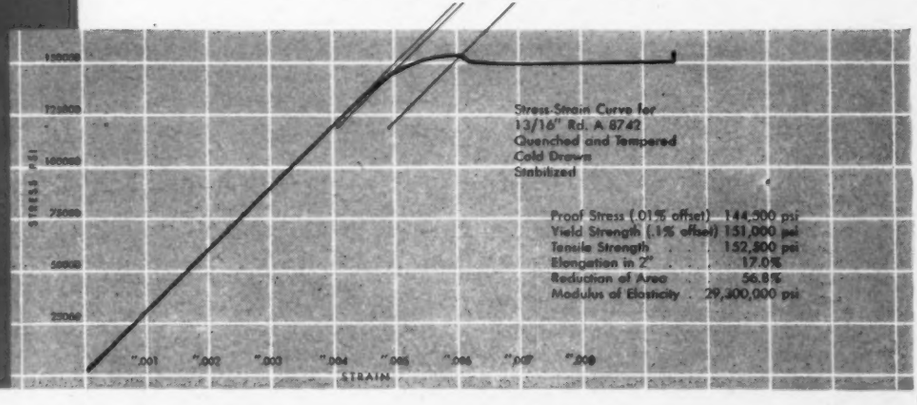
The photomicrograph and stress-strain curve shown are typical of the "picture" you can have *in advance* of the Wyckoff Heat Treated Cold Finished Steel you use.

Wyckoff STEEL COMPANY

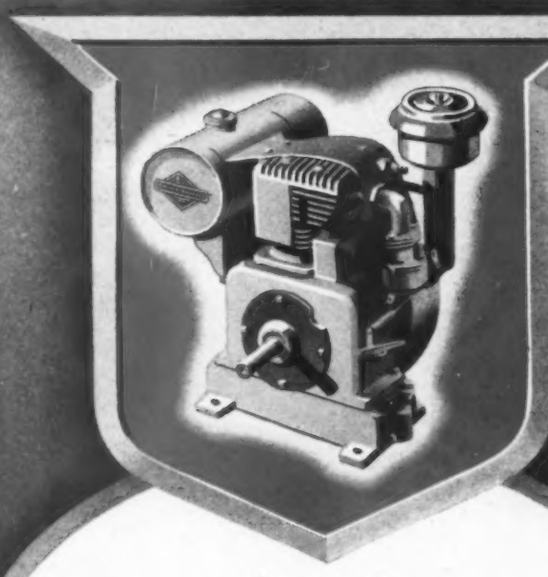
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Works at: AMBRIDGE, PA.; CHICAGO, Ill.; PUTNAM, Conn.; NEWARK, N. J.

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Engines are "Tops" in Demand

There are over 2½ million reasons for today's unprecedented demands for Briggs & Stratton powered equipment. They are the more than 2½ million Briggs & Stratton engines built during the past 26 years. These engines have established an unbeatable record for instant starting, long life, dependable operation, and maximum performance with a minimum of servicing. No wonder these stout-hearted, precision-built engines rate "tops" as the *power choice* of equipment users, dealers and manufacturers everywhere! And here's good news! Deliveries are improving with our stepped-up production. It will pay you to wait until you can have equipment that's powered RIGHT by — Briggs & Stratton air-cooled engines — the world's finest.

BRIGGS & STRATTON CORPORATION
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Air-Cooled Power

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

POWER HACK SAW TENSIOMETER



TENSIOMETER designed to set and maintain correct blade tension on power hack saws is announced by Millers Falls Co., Greenfield, Mass. Unit is a small cylinder enclosing a strong calibrated spiral spring. It is easily attached to blade holder and acts as a shock absorber for blade. It can be set by hand to a tension of 3000 lbs. without a wrench. It is said to improve accuracy of cut and increase blade life.

SIXTY-TON SHOP PRESS



SHOP press of sixty tons capacity is announced by Rodgers Hydraulic, Inc., Minneapolis, Minn. Features include fast operation, ruggedness, versatility and large capacity for work size. Overall height is 88¾"; floor space, 38" x 70"; weight, 1,125 lbs. Recommended uses are for pressing, straightening, shearing, bending, clamping, riveting, broaching, and assembly work. Special attachments for ring gear riveting and aligning and centering shafts, rod, etc., are available, as well as an adjustable end support stand for handling long material. Literature available.

LIGHT BELT GRINDER ATTACHMENT



LIGHT, narrow belt grinder attachment, type N-2, said to be capable of performing all kinds of light burring and grinding operations on a wide variety of composition and plastic materials, as well as steel, iron, aluminum, wood and glass, is announced by Porter Cable Machine Co., Syracuse, N. Y. It is furnished without motor, is 27" high x 2½" wide. With endless abrasive belt 2" x 48", it may be used in vertical, horizontal or any position between the 90°.

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Having trouble finding the right tire for the job? You'll find it in the *complete* line of U. S. Industrial Tires.

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Blades made for the job COST LESS

Only from a complete line can you be sure of getting the blades that cut cleanest, fastest, longest on *your* work.

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METAL CUTTING
Victor

• HAND BLADES

VICTOR HIGH

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VICTOR

• FRAMES



• BAND SAWS
(including skip-tooth)
(metal and wood cutting)



VICTOR
Victor Saw Works, Inc.
Middletown, N. Y.
Makers of Hand and Power Hack Saw Blades, Frames and Metal Cutting Band Saw Blades.

Plastic Protective Caps of Many Uses

Material is tough, possesses good electric, chemical and physical qualities, and long life

A new method of processing a plastics material to afford a protective means for a host of industrial products has been announced by the General Electric plastics divisions, Pittsfield, Mass.

Possessing good electrical, physical and chemical properties, the material is tough, durable and resilient as well as water, acid and alkali resistant. It has good wet strength and will not split while it is being applied or during prolonged storage. The method of processing and its ease of application already make it suitable for a wide range of products and offers unlimited possibilities for many other fields.

Use of the material is twofold. It may be incorporated in the design of the product itself such as a covering for bus-bar insulation, as terminal ends or as an electrical or mechanical seal for wires and tubing. At the present time it is more extensively used as a temporary protective during storage and shipment or during the fabricating and manufacturing processes of the finished product. Illustrative of the former is its use as coverings for cable ends, grips for pliers, wrenches and wirecutters for insulating purposes. One of its best applications is to form a protective covering for threaded parts of various types of equipment.

The material is available in the form of caps and sleeves. Processing calls for

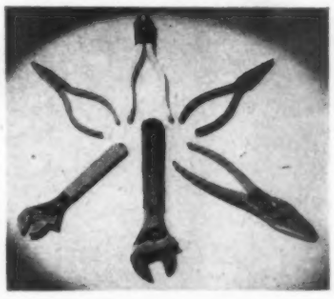


Protection for threaded parts.

a special dilator solution developed by G. E. in which the material is immersed for a period of two to four hours. This expands the material as much as half again its normal size. While dilated the unit is placed in position on the product and is allowed to dry. It soon shrinks to smaller than its original size and forms a tight fit around the product without losing any of is physical properties. It may be easily removed by cutting with a knife.

The protection which the plastics provide varies according to its application. In covering the ends of tubing used in the manufacture of refrigerator evaporators, the plastics cap prevents dust and moisture from entering the tubing during assembling operations. For threaded parts, the covering protects the threads from being damaged by contact with other materials. As a covering for drills and other tools, it may well be used to replace grease and prevent rust and corrosion as well as protect the tools from possible contact damage. On pliers and wirecutters, the covering is an excellent insulator.

The caps and sleeves are available at the present time in any desired length and in diameters up to an inch. However, the fact that they are swollen to half again their original size plus the fact that they may be stretched consid-



Covering for tool handles.

erably when in the swollen state permits diameters of two inches to be covered.

One of the important advantages of the product is its long life during storage. Whereas other coverings might be affected by the temperature and humidity when stored after a period of months, tests indicate that the material will last wihout splitting or cracking for years. Other advantages include the fact that the material is heat resistant as far as conventional baking cycles are concerned and is resistant to plating and degreasing solutions.

The G-E product is shipped dry and, according to engineers, there is no necessity for storing it in any particular way. They said it may be beneficial to preserve the caps and sleeves in sealed containers until they are placed in the dilator solution but actually they can be left in or out of the dilator indefinitely.

LIFT TRUCK SURVEYS OFFERED BY TOWMOTOR

Offered as an aid to manufacturers with materials handling problems are the illustrated Lift Truck Job Studies published by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio. These studies report in detail the methods used by many leading manufacturers to speed up the materials handling system with corresponding increases in efficiency and labor-saving economy.

Newest in the series is one covering the materials handling methods used by The Cleveland Graphite Bronze Company, largest producer of lined bearings and bushings for automotive and aviation engines.



IN CONNECTION with your steel problems...

When the switchboard operator at Weirton makes your connection, you have a direct line to fast action on your steel problem. For Weirton is an integrated mill. Sales, metallurgy, production and shipping are closely coordinated "under one roof" to provide on-the-spot information, quick decisions, great flexibility of production.

Weirton's highly integrated operation enables us to give you faster, more specialized service on all the steels we make: Weirite, Weirzin, Weircoloy, Weiralead . . . hot and cold rolled strip, sheets and ternes . . . cold rolled spring steel . . . N-A-X High-Tensile.

WEIRTON STEEL CO.

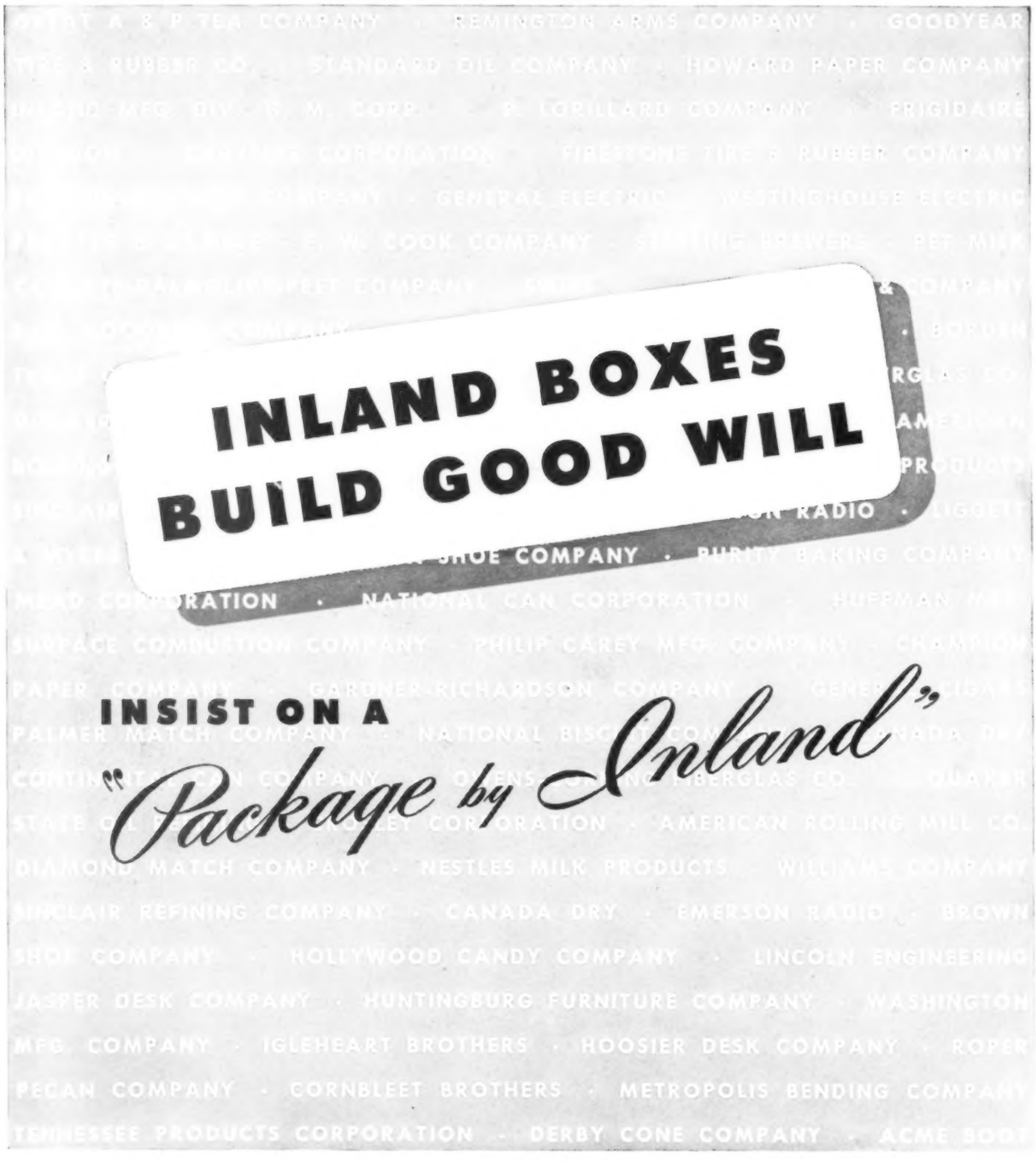
WEIRTON, W. VA. Sales Offices in Principal Cities

Division of **NATIONAL STEEL CORPORATION**

Executive Offices, Pittsburgh, Pa.

WEIRTON STEEL COMPANY

NATIONAL STEEL



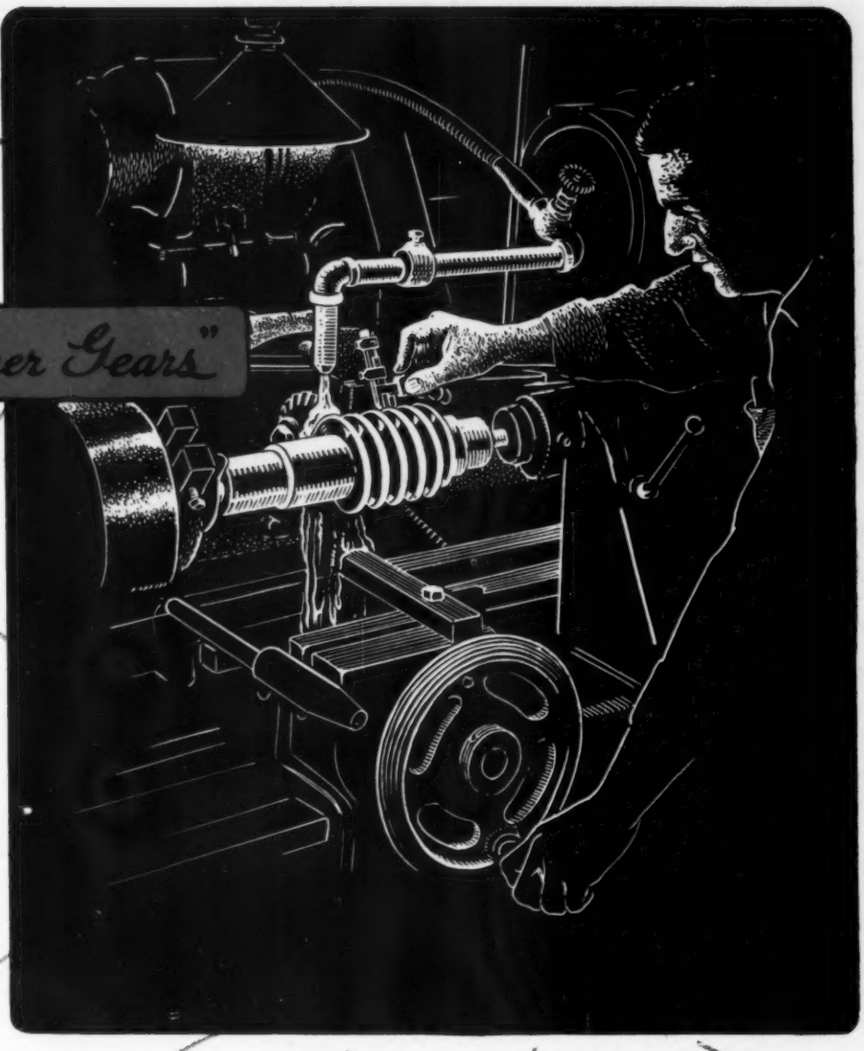
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CONTAINER CORPORATION
Corrugated Fibre Boxes

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"The mark on Finer Gears"

ILLINOIS GEARS



Milling a worm in our precision worm gear department.

Tough "Specs" and Quick Delivery Don't Frighten Us!

When we recall some of the "impossibles" tossed at us during the war years, all of which we took in stride, today's demands for precision gears and "impossible" delivery schedules are easy by comparison.

If you want to end your gear worries, make us your source of supply for cut gears of every type and size. We have the facilities, the experience, the cooperative organization and the uncanny knack of knowing just what you want.

No gear is too large, or too small — no specification too tough — but what we'll gladly handle it — in our usual prompt, efficient way — the way that you'll like.

ILLINOIS GEAR & MACHINE CO.
Chicago 35, Illinois

Makers of Cut Gears and Pinions of All Types *any* Size.

ILLINOIS GEAR & MACHINE COMPANY

Thermoid—For Progress in Industry

The old-fashioned hand gun was a great advance over the oil can and grease paddle. But it was still slow and lubricant-penetration was uncertain.





Just pit the antique method above against this modern, powerful portable greasing unit for servicing all types of automotive and construction equipment on the job. The compressor here delivers pressures up to 200 lbs. which may be boosted on the hydraulic side to as high as 10,000 lbs. per square inch! Thermoid wire braid hydraulic hose carries this load with ease.

Helping the planners of tomorrow's products and methods is just one of Thermoid's services to industry. Without the development of a hose capable of extremely high pressures, the above pictured greasing unit would still be an "inventor's dream." The production of Industrial grease and hydraulic control hose is the answer to many difficult problems. There's an answer waiting at Thermoid for your special hose problems, too.

Get in touch with your local Thermoid Jobber or direct factory representative. 60 years of research and industrial rubber know-how are at your beck and call for problems relating to all kinds of hose, belting and friction materials.

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

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DIVISION OF THERMOID COMPANY

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Contributor to Industrial Advancement Since 1880

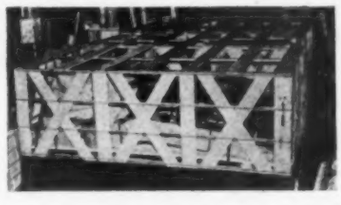
COMMODITY LISTING OF SURPLUS WAR PRODUCTS

The War Assets Administration has published its first comprehensive commodity listing of surplus war products obtainable at sales at site. Listings are available for inspection at WAA field offices. By December 31st WAA plans to have 124 additional sales at site in operation with $1,137,000,000 worth of surplus goods on sale. It is the plan to issue a new commodity listing every 30 days with an index listing: merchandise, sale locations, priority buying periods for federal government, veterans, small business, state and municipalities, non-profit institutions, and non-priority purchasers—all reported one month in advance of the listing's publication.

HUGE WIREBOUND CRATE

A wirebound crate, believed to be the largest ever designed, is now being used by the U. S. Machine Corporation of Lebanon, Ind., for the shipment of 2,200-pound commercial self-feed stokers, it is disclosed by the Wirebound Box Manufacturers Association.

Designed especially by wirebound engineers to fit the shipping needs of the huge stoker, the crate measures 114 inches in length, 60 inches in width and



Believed to be the largest Wirebound crate ever designed

36 inches in height. Feed screw, transmission, retort and other component parts of the stoker are fastened securely to an 111-pound box skid and a 67-pound wirebound mat is wrapped around the skid to form a single-unit package. Tare weight of the container, including a 40-pound wooded top is 218 pounds compared to the 500-pound weight of the container previously used for the shipment of the stokers.

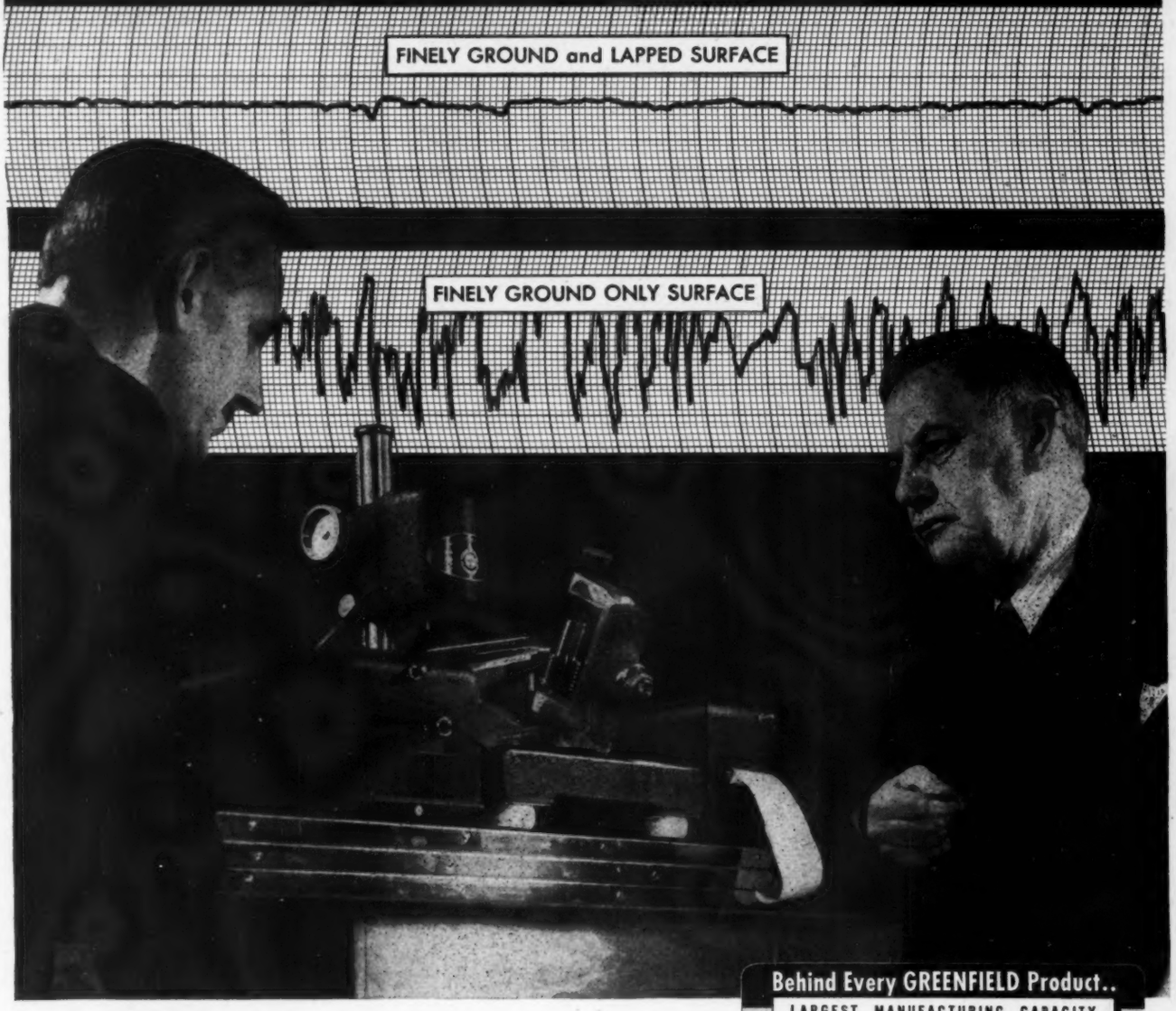
The wirebound mat, composed of 7/32-inch veneer, reinforced with high tensile steel wire, is engineered to provide the utmost in protection for the stoker. Flexibility of the crate increases its resistance to shocks and jars resulting from handling and shipping. A recent shipment of 42 stokers arrived at a government operated plant with the crates undamaged and their contents completely unharmed.

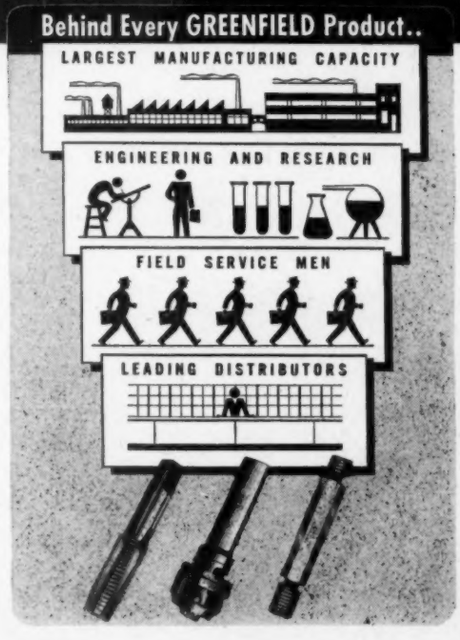
SCREW MACHINE MOVIE

Sound movie showing the construction and operating features of Greenlee 6-spindle automatic screw machine, is announced by Greenlee Bros. & Co., Rockford, Ill. It is a 40-minute, 16 mm film that can be shown on any standard 16

(*Continued on page* 188)

Smoother Surfaces Give Longer Life





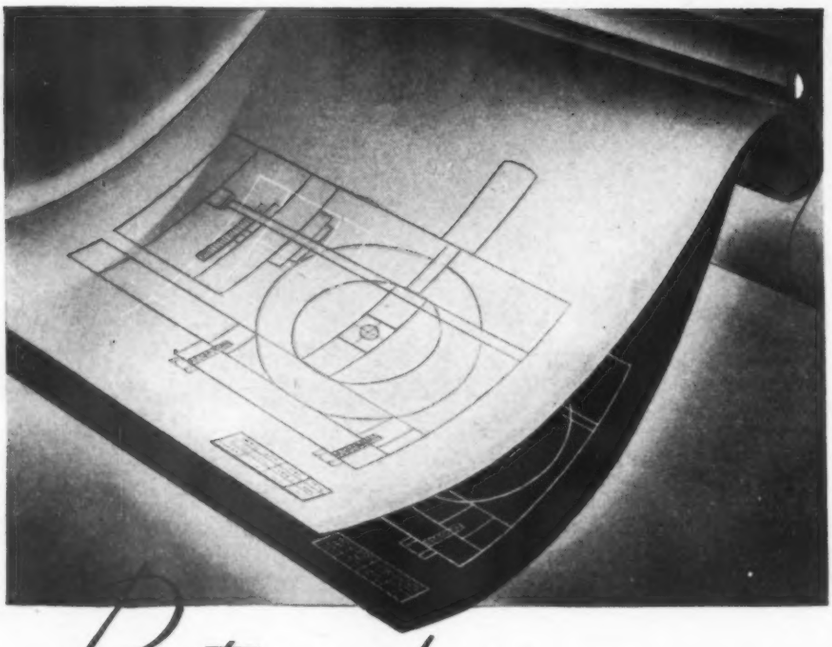
All "Greenfield" Gages have finely ground and lapped surfaces. To the casual eye, such surfaces look no different than if ground only. But the graph produced by the Surface Analyzing Machine illustrated above shows this difference clearly. To the gage user, this difference also becomes apparent—in terms of wear. A "Greenfield" Gage will give longer and more accurate service—and therefore better value—because of its finely ground ***and lapped*** surfaces.

It's "Greenfield's" attention to such unseen quality factors that give you ***more for your money*** when you use "Greenfield" Tools and "Greenfield" "Show-How" field service.

GREENFIELD

GREENFIELD TAP and DIE CORPORATION

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Prints as sharp as the original lines

Their faultless light transmission is one reason Arkwright Tracing Cloths are now *preferred* in thousands of blue print rooms from coast to coast. Arkwright has never depended on surface oils to provide the perfect translucency that can only be built into a tracing cloth by special mechanical processing.

That's why prints from Arkwright Tracings are just as sharp as the original drawing . . . no ghosts, distortions or false centers, caused by thin places, specks and pinholes.

And an Arkwright Tracing is a *permanent* tracing, because with mechanical processing, tracings never discolor or grow brittle. Months and even years later, prints are just as clean as when the tracing first left the board.

Why don't you see for yourself what a difference there is? Send for free working samples. Try them. Write to Arkwright Finishing Company, Providence, R. I.

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Sold by leading drawing material dealers everywhere

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TRACING CLOTHS

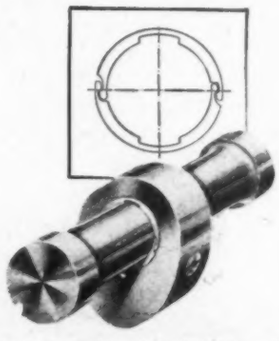
AMERICA'S STANDARD FOR OVER 25 YEARS

(*Continued from page* 186)

mm sound projector. Design and function of parts and mechanisms are exposed, and specific attention is given to principles of operation and set-up. The presentation includes several views of machines in actual operation in various plants, with close-ups showing tooling and parts produced. The film is available on a loan basis.

NEW TWO-PART INTERLOCKING RETAINING RING

Among the war born developments in retaining rings now available, is a new ring of two-part interlocking construction. Fitted over a shaft in a radial direction, the ring forms a complete annular shoulder of uniform section height around the circumference of the shaft thereby eliminating the wide gap characteristic typical of conventional open type "C" rings. This feature substantially increases the normal thrust capacity of the ring.



Ring has positive interlocking action

Consisting of two mating halves that interlock, the ring is of dynamically balanced design and therefore particularly suitable for equipment involving high rates of RPM such as spindle speeds of textile machinery. Because of its positive interlocking action, the ring cannot be lifted out of its groove by high centrifugal forces or by linear expansion caused by friction with abutting parts or surfaces. Yet, disassembly of the ring requires nothing more than a slight prying action with a screw driver.

Samples and data sheets giving full description and specifications of this new development — identified as the Truarc Interlocking Ring, Type 5107 — may be obtained by writing Waldes Kohinoor, Inc., Long Island City 1, N. Y.

DIELECTRIC PREHEATING BOOSTS PRODUCTION OF MOLDED PLASTICS

Dielectric preheating of plastics before molding, the generation of heat within the charge by a high-frequency electric field, in effect adds molding presses to a factory, according to a paper given by three General Electric engineers at the recent National Electronics Conference.

(*Continued on page* 192)

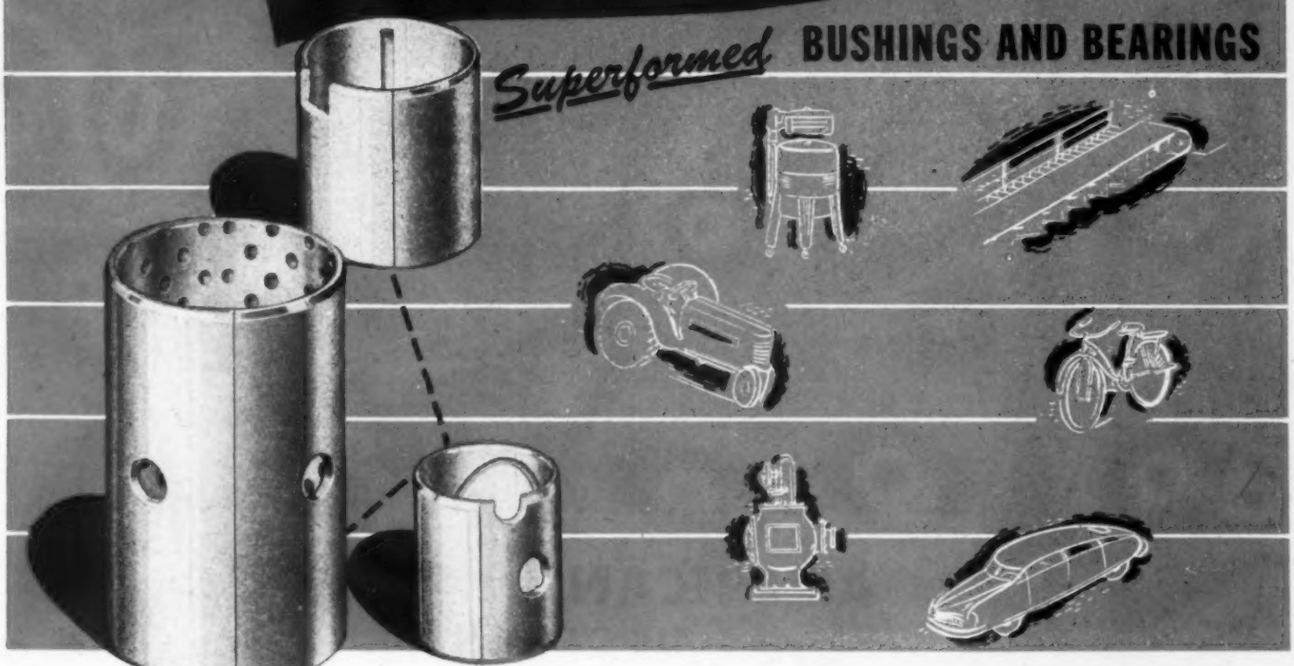
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Superformed **BUSHINGS AND BEARINGS**



When the job calls for performance that ordinary bushings or bearings are not equipped to give—and cost is a factor—specify FORMETAL. Their exclusive method of manufacture provides features that result in labor saving... smoother performance... longer life... even under extraordinary conditions.

Some of the advantages of FORMETAL Bushings and Bearings are: (1) a higher Rockwell hardness without loss of machinability, (2) a thinner wall can be used which will give the same strength as the heavy wall of an ordinary bushing, (3) custom-made oil grooves, to provide a wiping action of the oil film, can be engineered to the need.

Made of bronze, steel, or alloy of your specification, FORMETAL Bushings and Bearings cost you no more than ordinary types. Write for new free booklet. If you are an engineer or buyer of bushings you will want it for constant reference.

To get your products really rolling **use .... FORMETAL!**

***also* SPACER TUBES**

and...

SLEEVES... FERRULES... TUBES IN SHORT LENGTHS OF ANY METAL OR ALLOY, CAN BE FURNISHED TO SPECIFICATION

Check your needs for bushings and bearings against the wide range of types illustrated in this compact booklet. Send for it today.



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4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS



AMERICAN PHILLIPS SCREWS are "FIRST MATES" Cost-wise

...BOTH TO BOAT-BUILDERS AND OWNERS

In shipyards (as in automobile plants, refrigerator factories—*or what's yours?*) American Phillips Screws deliver these special savings: Swift, sure-handed handling. Automatically straight driving. Protected, unspoiled work-surfaces. More and better work done far more easily. All of which translate into TOTAL TIME-SAVINGS AS HIGH AS 50%!

And American Phillips savings reach straight through to the buyer of the boat. For these screws resist corrosion, withstand vibration, remove screw-driving from his maintenance work, help to keep his craft always trim, tight, and shipshape.

You can steer by this: American Phillips Screws are profitable not only production-wise. They're potent sales promotion, as a mark of quality construction . . . and they're sound sales-protection, too. *You* can get these same production and sales advantages in American Phillips Screws in any type or metal (see below) for any fastening requirement. Write.

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AMERICAN PHILLIPS *Screws*



ALL TYPES
ALL METALS: Steel, Brass, Commercial Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)



"As One User to Another"

MIDWEST Talks About PIPE WELDING FITTINGS

When you buy Midwest Welding Fittings, you get the same fittings that we use by the thousands in our own shop fabrication and field erection. So we can talk about pipe welding fittings "as one user to another."

We *know* that Midwest Welding Fittings save time in prefabricating piping . . . and in erecting piping in the field. Their sound design, dimensional accuracy and uniformity are features which are of definite help in making the job easier . . . in saving time and money . . . in providing better piping.

We *know* that the large variety of Midwest Fittings is another time and money saver . . . in addition to improving piping practice. We have reference to such Midwest developments as reducing elbows, "long tangent" elbows, shaped nipples, etc. See Bulletin WF-41 for complete information.

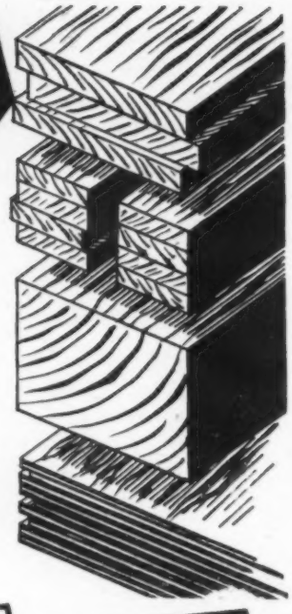
MIDWEST PIPING & SUPPLY Co., Inc.

Main Offices: 1450 South Second Street, St. Louis 4, Mo.

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Here's Lumber Service Made to Order

Pattern Lumber — from old growth logs. Select quality, Mahogany, White Pine, Kiln-dried in our own plant. Cut to length.

Crating Lumber — for safe, economical shipments. Lengths, thicknesses practical for your purpose.

Timbers — from the tall fir country. Cut, trimmed to your needs. Teco Connectors, timber engineering data.

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PITTSBURGH 3, PA.
Phone: HEmlock 0700

LUMBER COMPANY

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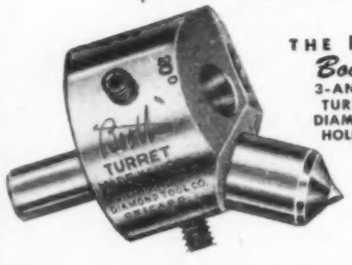


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are the reasons for specifying
CLARK BROS. BOLTS
instead of just "A" Bolt.
You will save money.

CLARK BROS BOLT CO.
Milldale 1, Connecticut

WANT { BETTER GRINDING? SHARPER DIAMONDS? FEWER DRESSINGS?



THE NEW *Booth* 3-ANGLE TURRET DIAMOND HOLDER

Put the new Booth 3-Angle Turret Diamond Holder on that "finish" dressing job and see how it improves the cut of your wheel. See the automatic, self-leveling action maintain the diamond point at a fixed level with 30°, 20° and 10° drag angles. 3 drag angles give 3 cutting points—double diamond life—reduce re-sets. 3 Angles assure a sharp, clean-cutting diamond—make dressings accurate, improve grinding—save diamonds, save wheels, increase production.

Available on a rental basis of $2.00 per month, payable six months in advance. Rental includes Turret, Block, Adapter Rod, maintenance, repairs, and engineering installation service. Satisfaction guaranteed. (Give make, type and size of grinder when ordering). Specify Booth Turret equipment on your new grinders.

Loc-Key-Set Diamonds (Common 12.00 Carat, Medium 24.00 Carat, Select 48.00 Carat) mounted to fit Turret. Specify Carat size and Quality in ordering.

DIAMOND TOOL CO.
(Not Inc.)
Sheldon M. Booth, President
938 E. 41st St. Chicago 15, Ill.
Customers' Overnight Quarters

(*Continued from page* 188)

Chicago. G. F. Leland, Apparatus Dept., D. E. Watts, Electronics Dept., and T. N. Willcox, Chemical Dept., said in the paper that in addition to boosting molding production as much as 75 per cent over older methods of preheating, the dielectric process substantially lowers production costs.

The great increase in production possible with this method is the result of elimination of warmup time in the molding press, according to the G-E men. Lower operating costs are realized by lowered mold repairs, which means fewer interruptions in production and shipment, and by reduction of scrap. In addition, more prompt delivery can be made on new designs because fewer mold cavities are needed when the charge is preheated dielectrically.

CARBIDE EDGED KNIFE

Illustration shows carbide edged knife, specifically designed for cutting linoleum and composition roofing and siding, etc., developed by the Carboloy Co., Inc., Detroit, Mich. It is reported that the



Knife also makes cutting in zero weather much easier.

knife cuts easier, lasts longer than ordinary blades, and requires very little sharpening. Design of tip and the carbide cutting edge is said to make cutting half-inch and three-quarter inch composition siding an easy operation.

WOODWORKING SLIDEFILM TRAINING KIT

A new kit-set of 22 discussional type teaching and training slidefilms, "Instructional Program of Safe Practices in Woodworking," for training, review and test, is now available through The Jam Handy Organization, 2821 E. Grand Blvd., Detroit 11, Mich. There are fourteen subjects to aid instruction in safely using woodworking tools and machinery, and eight subjects on basic safety shop practices. The kit-set comprises a total of 1,128 individual pictures, special photographs, drawings, charts, and pictorial exhibits. Each subject is organized into lessons. Each lesson concludes with a review and a series of test questions designed to stimulate class discussion and insure complete undertaking of the lesson.

(*Turn to page* 194)

What ever happened to Grandfather's glue pot?

The things that have happened to grandfather's glue are one of the most fascinating stories of the Age of Synthetics.

Here is one of the oldest trades of man. For centuries he worked with "natural" materials. Glue was just another form of gelatin; if it was very pure you ate it; if it had impurities, you made glue of it. It did a pretty good job of sticking things together, but it wasn't moisture proof and sometimes it wasn't temperature-proof.

Then came the age of synthetic resins which opened up the possibility of making two materials adhere to each other in the same way that the particles of the individual materials themselves adhere.

Today, we have phenolic resin adhesives that will sometimes outwear the materials they are holding together . . . that resist water, the extremes of atmospheric temperatures and exposure to the elements . . . adhesives that bind things which could never be glued together in grandfather's day . . . adhesives that have made the marvelous new developments possible in plywood . . . adhesives that had enabled the "glue gun" to replace the hammer and the nail in certain kinds of construction work.

Koppers is one of the principal producers of the phenols used in the manufacture of phenolic resins for adhesives, plastics, coatings, and many other synthetic products. Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pa.

KOPPERS—THE INDUSTRY THAT SERVES ALL INDUSTRY



K
KOPPERS

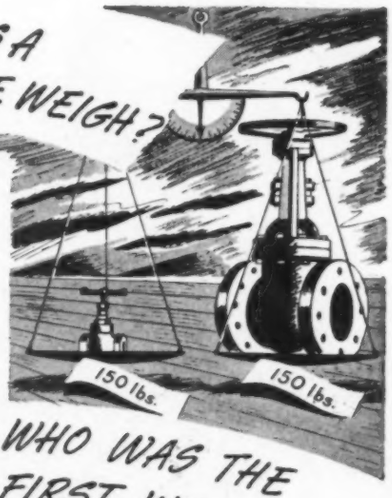
CAN YOU GUESS THE ANSWERS?



1. WHAT IS THE LONGEST, NARROWEST MACHINE?

Its length measures hundreds, or even thousands of feet. Yet its width measures inches, or only a fraction of an inch. It is wire rope—a machine with as many moving parts as it has wires. A typical wire rope has 114 moving parts. Acco's Hazard Wire Rope Division makes good wire rope of every size.

2. HOW MUCH DOES A 150-POUND VALVE WEIGH?



A 150-pound valve may weigh several hundred pounds—or only a few ounces. But, regardless of size or weight, it is designed to control the flow of fluids at a pressure of 150 pounds. Acco's Reading-Pratt & Cady Division makes valves for pressures from 150 to 1500 pounds.

3. WHO WAS THE FIRST WELDER?



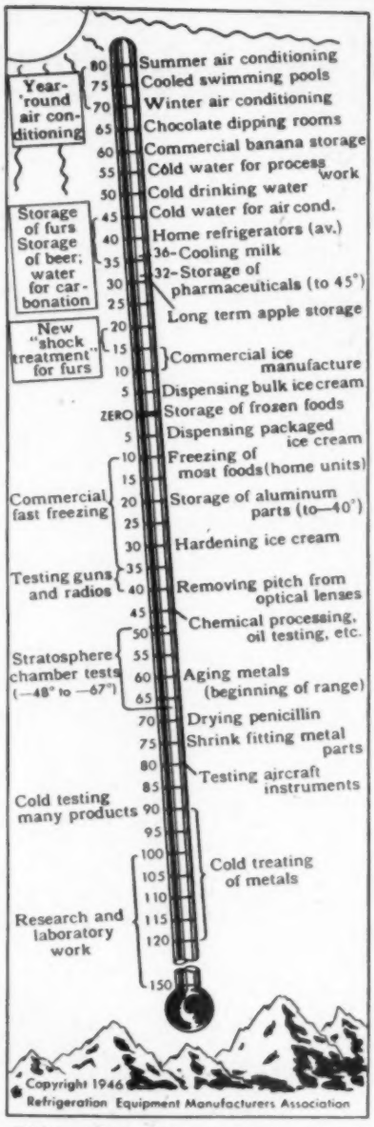
The first worker in iron mentioned by The Book of Genesis was Tubal-Cain. His method of welding was doubtless very primitive. But today, highly developed techniques of welding are used by industry. Acco's Page Steel and Wire Division makes electrodes and welding wire which serve modern welders efficiently.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain · Wire Rope · Aircraft Cable · Fence · Welding Wire · Cutting Machines · Castings · Wire · Springs · Lawn Mowers · Bolts & Nuts · Hardness Testers · Hoists & Cranes · Valves · Pressure Gages · Automotive Service Equipment

ACCO

AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

REFRIGERATION INDUSTRY DEVELOPS "ALL-INDUSTRY" THERMOMETER



That present-day uses of mechanical refrigeration in fact extend nearly twice as far below the zero-mark on the thermometer as they do in above-zero calibrations is little known to the average individual who regards 80 above as "pretty hot" and 10 below as "pretty darn cold."

In a recent survey of the services now performed by mechanical refrigeration and air conditioning, the Refrigeration Equipment Manufacturers Association listed more than 200 uses, ranging from air conditioning for human comfort in the above-zero brackets, to the 65-degree above to 36-below span used in various food preservation and processing, on down to the subzero temperatures of 90 to 150 below used in the cold-treating of metals and in research work.

Typical uses in the entire 230-degree range are shown in a new "all-industry" thermometer prepared by REMA with the cooperation of refrigeration and air conditioning engineers. Equipment to perform the multiplicity of tasks shown now

(*Continued on page* 196)

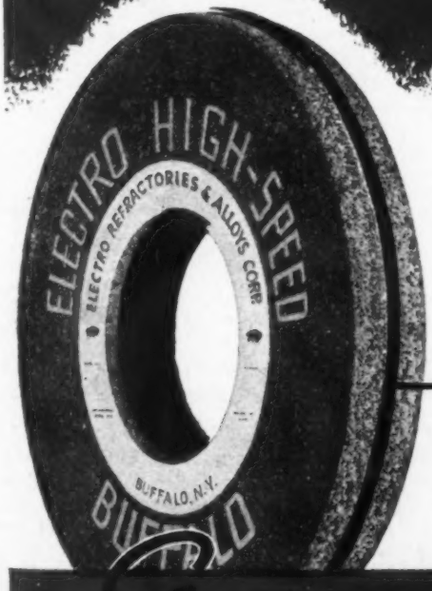
BARS, BILLETS, FORGINGS AND CASTINGS SNAGGED MORE SPEEDILY MAKE A HIT WITH PRODUCTION MEN



STEEL FORGINGS
MAGNESIUM CASTINGS
GRAY IRON CASTINGS
MANGANESE CASTINGS
ALUMINUM CASTINGS
ALLOY STEEL CASTINGS
BRASS CASTINGS
LOW CARBON STEEL CASTINGS
STAINLESS STEEL BARS
BRONZE CASTINGS
HIGH SPEED STEEL BILLETS
ALUMINUM BRONZE BILLETS
HIGH CARBON STEEL BARS
ANNEALED MALLEABLE CASTINGS
ALLOY STEEL BILLETS

Electro HIGH SPEED SNAGGING

Sock the loads to 'em. They'll "eat it up." They take brutal bites, scorn pressures and defy shocks. They rough-finish *quick*. Don't expect the next man to complete your snagging job. With Electro HIGH SPEED SNAGGING WHEELS, you can afford to put a perfect rough finish on castings, forgings, bars, billets or anything else. You'll make money doing it; and you'll make a hit with the next fellow, whether he is a company man or a company customer. Let us prove it.



LOOK FOR THE GREEN BAND

Also, let us send you a copy of the most talked-of catalog in industry, our new Grinding Wheel Manual in full color, giving complete technical information on grinding wheels as to construction, components, selection and adaptability to specific jobs. Sent free on written request to production men who ask for it.

K-327

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WHEN PRECISION IS A "MUST"
always depend on...
American Swiss Files

Whether the job calls for careful finishing of a large surface, or painstaking filing of a fine opening — if precision is required, you'll be *sure* of best results if you choose from the more than 3000 shapes, cuts and sizes of "AMERICAN SWISS" Swiss-Pattern Files.

These files are specially heat treated with automatic control and regulation to assure uniform hardness. Many sizes are made to tolerances as close as ±.002 in. Their teeth are clean, sharp, and accurately cut. And finally, a rigid inspection system eliminates all imperfect files — to be sure that no "seconds" slip by, all rejects are scrapped in an acid bath.

Remember, for more than 40 years, all "AMERICAN SWISS" files have been made to *one* standard — "Only The Best Are Good Enough."

Buy From Our Distributor
AMERICAN SWISS FILE & TOOL CO.
ELIZABETH 1 NEW JERSEY

ONLY THE BEST

ASK FOR THEM BY THIS NAME

American Swiss
SWISS PATTERN FILES

(*Continued from page* 194)

is in production in hundreds of factories throughout the country.

For the first time in the industry's history, equipment covering the entire range was shown at the Fourth All-Industry Refrigeration and Air Conditioning Exposition in the Cleveland Public Auditorium, Oct. 29 to Nov. 1.

CONCENTRATION AND BLOWDOWN CALCULATING CHART

Practical calculating chart for measuring concentration and blowdown in marine and stationary boilers, is available from the Water Treatment Division of the Magnus Chemical Co., Garwood, N. J. It is felt that consistent use of the chart should result in fuel savings, cleaner steam and reduction of pipe line and turbine deposits. The chart makes it possible for the engineer to establish definite factors to aid him in fixing his blowdown rates. Percent blowdown to maintain maximum permissible concentration is rapidly read on the chart which also provides for blowdown chloride concentration where blowdown is controlled by maintaining a suitable chloride concentration. Chart can also be used to measure condensate return against water make-up, using the chemical analysis for total solids as a basis for the calculation.

NEW PROCESS FOR FORGING LARGE DIAMETER STEEL ROUNDS

A new process for forging high-alloy large diameter steel rounds has been developed by Glenn W. Shetler, vice president, Barium Steel & Forge, Inc., Canton, Ohio.

With this new forging practice for tool steels, it is now possible to forge successfully rounds up to 12 inches in diameter with a reduction of residual strains, elimination of center bursts and assurance of uniform cross sectional carbide distribution, it is said.

To fabricators of tool steels, the Shetler process will effect appreciable savings in time and machining costs, since there is greater certainty of quality throughout the forged steel round, it is claimed.

Manufacturers of high-speed and high-alloy tool steels will also benefit from this new method because no longer will they have to restrict ingot size to the smaller, less economical molds, according to the company.

The process was developed in Barium's Canton, Ohio, plant, with metallurgical assistance from Jessop Steel Co., Washington, Pa., producer of tool steels.

The forging practice involves use of a V-type bottom die and a flat top die in a hydraulic press. Starting with a square billet, the corners are progressively laid down until a round shape is obtained. The kneading action refines the structure to a degree not heretofore possible with conventional hot working methods. Patents have been applied for covering the process.

SIMPLIFIES CHANGING HEAVY TRUCK TIRES

Illustration shows truck tire carrier developed by the T. E. D. Corporation, 928 South Flower St., Los Angeles, Calif., which is said to make the changing of heavy truck tires and wheels a one man job. No lifting is necessary to remove the spare and replace the flat, even tilting to upright position for rolling being done without lifting. To change a tire the holding clamps are released and the cradle portion of the carrier which holds the tire and wheel is pulled out and away from truck body to a position where the tire can be tilted upright while it is attached to the carrier. The tire then

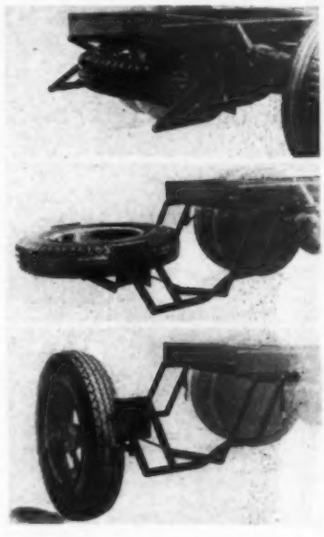


Illustration shows tire and wheel clamped under truck chassis; carrier extended; and, cradle tilted so tire rests on ground

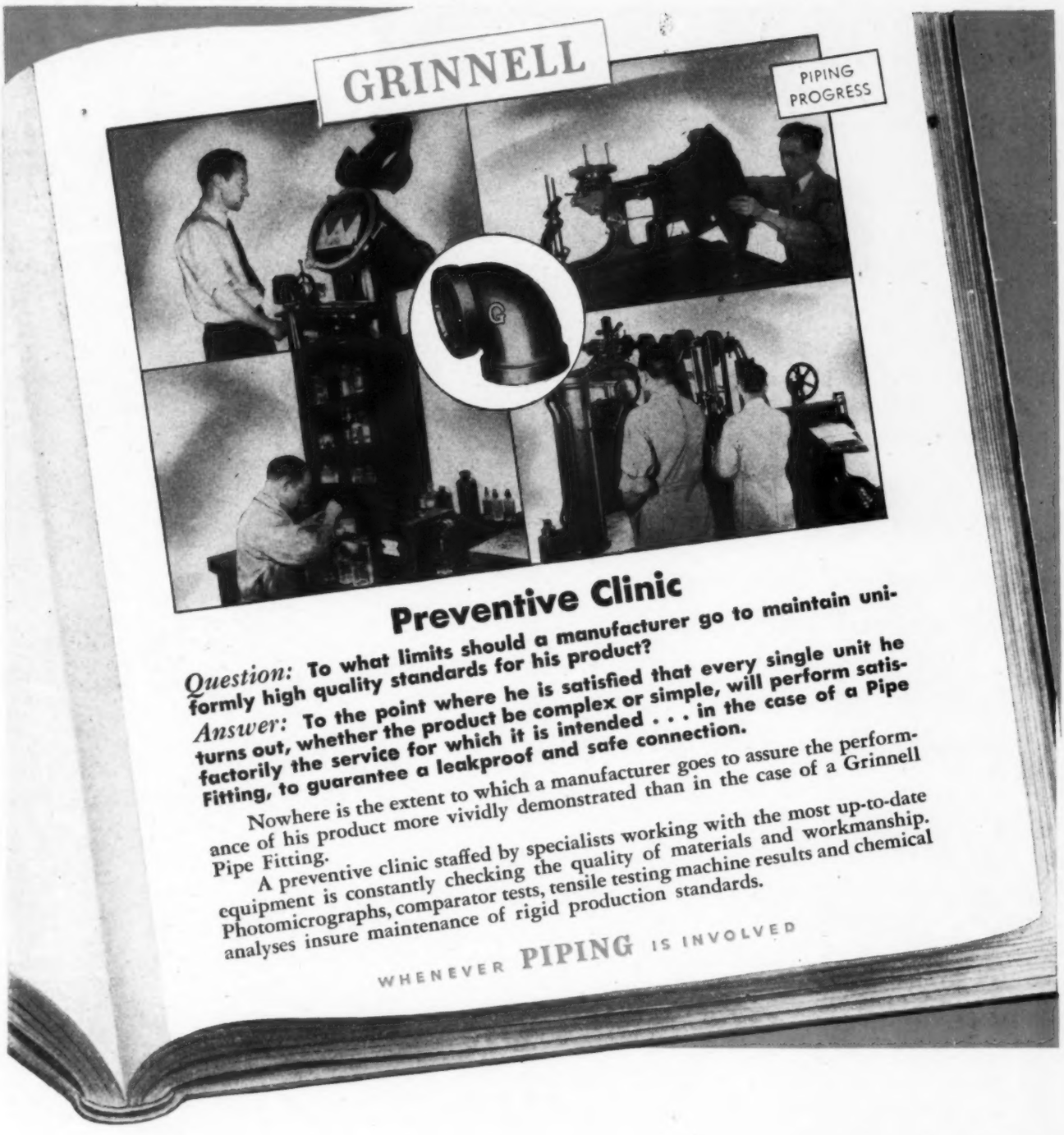
rests on the ground, and is easily detached and rolled to wheel requiring replacement. Flat, likewise, is rolled to the cradle and clamped in upright position. Maker of cradle says the whole job is easily done by one man. The carrier may be bolted to the chassis frame of vehicle at rear or side. The carriers are made in two sizes and with choice of holding down bars — for disc wheel or demountable rim; viz.: Model A, Max. Cap. 8.25 —20; Model B, 11.00 — 22.

DIRECT LINE PROCESS FOR POSITIVE PRINTS

Announcement is made by the Charles Bruning Company, 4754 Montrose Ave., Chicago, Ill., of the BW Direct Line Process for making direct line positive prints directly from transparent or translucent originals. The printer-developer equipment on which they are produced requires no plumbing. Prints may be produced on card-weight paper, or on light-weight paper.

To distinguish prints used by different departments, light, medium or card-weight BW prints may be produced with

(*Continued on page* 198)



Preventive Clinic

Question: **To what limits should a manufacturer go to maintain uniformly high quality standards for his product?**

Answer: **To the point where he is satisfied that every single unit he turns out, whether the product be complex or simple, will perform satisfactorily the service for which it is intended . . . in the case of a Pipe Fitting, to guarantee a leakproof and safe connection.**

Nowhere is the extent to which a manufacturer goes to assure the performance of his product more vividly demonstrated than in the case of a Grinnell Pipe Fitting.

A preventive clinic staffed by specialists working with the most up-to-date equipment is constantly checking the quality of materials and workmanship. Photomicrographs, comparator tests, tensile testing machine results and chemical analyses insure maintenance of rigid production standards.

WHENEVER **PIPING** IS INVOLVED

Grinnell's investment in modern testing and inspection equipment is a willing contribution to assure that every connection made by a Grinnell Pipe Fitting is leakproof and safe. To many this may seem like an unnecessarily high standard. To those responsible for the erection and performance of piping it represents a dependability in quality which prompts them to turn to Grinnell for everything in piping from a tiny tube fitting to a complete power or process piping installation.

GRINNELL COMPANY, INC., Executive Offices, Providence 1, R. I. Branch warehouses in principal cities. Manufacturing Plants: Providence, R. I.; Cranston, R. I.; Atlanta, Ga.; Warren, Ohio; Columbia, Pa.

GRINNELL

FOUNDED 1850

WHENEVER **PIPING** IS INVOLVED



AMPCO METAL

eliminates delays caused by metal shortages . . .

The ferrous metal shortage is *another* good reason for using Ampco Metal and Ampcoloy Bronzes

Here are 3 big advantages

1 It's easier to get than ferrous metals today, and adaptable to many applications.

2 Increases service life of parts as it has high physical properties, excellent wear characteristics and corrosion resistance.

3 Increases the value of your product through longer life, better performance, and increased service values.

You can convert the ferrous metal shortage from a handicap to an advantage by specifying Ampco Metal or Ampcoloy for parts now made of iron or steel. Avoid the production slow-down caused by limited materials and priority restrictions; give your product the extra quality afforded by Ampco Metal and Ampcoloy Bronzes.

This aluminum bronze alloy is characterized by its structural uniformity and superlative wearing qualities — can be produced by centrifugal- or sand-casting, extrusion, or forging processes according to your requirements. Ampco offers complete facilities.

Ask your nearby Ampco engineer to help you select the right grade for your requirements. Write for Bulletin 72.

AMPCO Metal

The Metal without an Equal

AMPCO METAL, INC.

DEPT. P-11 • MILWAUKEE 4, WISCONSIN

Field Offices in Principal Cities

A-33

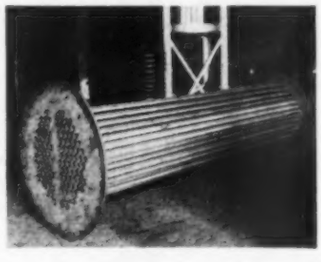
(*Continued from page* 196)

brown or red lines on a white background. No specially sensitized stock is necessary. When further differentiation is desired, prints may be produced on green tinted backgrounds with black, brown or red lines. To safeguard original tracings, BW transparent prints—thin paper reproductions or duplications of original tracings can be made. Another intermediate is a matte finish transparent acetate safety film, which n only safeguards original tracings, but is said to salvage worn or soiled tracings as it intensifies weak lines of original tracings.

Equipment consists of the Bruning combination Model 41, consisting of Model 40 printer and 158 developer. Actual printing and developing width is 46 inches.

TYPE 316 STAINLESS NOW STOCKED IN WAREHOUSE

Type 316 stainless containing 10% to 14% nickel, and which rates high in corrosion resistance, is now available in warehouse stocks in wide size ranges in bars, sheets, welded pipe, and tubing, ac-



Heat exchanger of Type 316 seamless tubing from warehouse stocks.

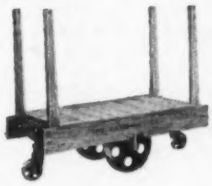
cording to announcement by Peter A. Frasse & Co., Inc., 17 Grand St., New York, N. Y. Type 316 is characterized by all-around toughness, is said to be excellent for cold forming, "very good" for welding, and "fair" for machining.

HOW LIFT TRUCKS CUT COSTS IN CANNING INDUSTRY

Recent issue of publication "Handling Materials" published by the Towmotor Corporation, Cleveland 10, Ohio, describes how three large California packing and canning plants have effected time savings in the coordination of receiving, processing, packing and shipping operations through the use of lift trucks. At one of the plants, the lift truck is called upon to handle 100,000 cases of canned goods per week, of many shapes, sizes and weights. These are carried on pallet loaded with as many as 80 cases—or over 3,000 pounds per pallet—and stacked to heights up to 20 feet in a few minutes, making for savings in time, space and manpower as compared with manual trucking and stacking.

(*Turn to page* 200)

FACTORY TRUCK
54600



Handy for many general moving jobs as "stock" truck . . . carrying parts from machine to machine in the course of manufacture. Three lengthwise bolsters assure ample platform support; strong construction throughout. Stakes are removable to add to its general handiness.

PLATFORM OR WAGON TRUCK
01433

Designed specifically for quicker handling of sheet plates in mills but proved very useful for carrying other large, bulky loads. Rugged construction throughout to withstand heavy loads . . . heavy iron strap, set flush, binds platform all around. Wheels extra wide for greater stability.



LIFT JACK PLATFORM TRUCK
500

Lifts and rolls easily . . . ideal for handling heavy loads in small spaces. Eliminates many handling processes. Powerful jack operates by merely pulling handle down. To remove jack, handle lifts up and jack rolls out. No pins, ratchets or levers to operate.



8 WAYS to Save Time and Lower Operating Costs

Receiving . . . production . . . shipping — no matter which of your departments has *slow spots*, it all adds to the cost of the finished job. Where load-handling is bogging things down, put in the right type of Fairbanks Truck for your purpose — each is specifically designed to put speed into tough handling jobs. Check the features of these eight trucks and if you don't see the one to help you, write for Catalog 50 in which over 200 various types are described and illustrated. The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; Boston, Mass.; Pittsburgh, Pa.; and Houston, Texas.

American industry rolls on fairbanks trucks

COMMANDER STEEL FRAME PLATFORM TRUCK — S2742A

Here's a Tilting or Center Balance Truck that's a real time-saver. Designed for quick turning in congested areas, around corners, narrow aisles. Turns in its own length . . . pushes from either end. Strong construction throughout. Available with Plain or Roller Bearing Semi-Steel Wheels or Roller Bearing Rubber Tired Wheels.



BARREL TRUCK — 426

All steel construction. Specially built to make handling of open barrels easy and quick. Good balance and maneuverability.



CASE TRUCK — L1191

Malleable iron construction. Light in weight yet practically indestructible. Designed for easy handling of heavy cases, boxes and heavy machinery. Spikes on frame top prevent load from slipping. Carries up to one ton.



COTTON TRUCK — 9213

Ideal for handling bales. Designed for the cotton industry but its features make it readily adaptable for easier handling of other large, bulky objects. Full-length steel strapping — front and back — on selected hardwood handles for extra strength and service.



FEED TRUCK — 9310

Designed for speedy handling of feed bags but just as handy for moving cases and bales, such as hay, etc. Also proved efficient for handling plumbing and heating supplies. Extra long nose for easier load pick-up . . . steam bent handles.



The Accepted General Purpose Jack



Simplex No. 22: 10-tons capacity, 12½" lift. Height closed 21¼". Toe lift 2¼" from ground level. Also furnished with non-rotating chain cap.

The Simplex No. 22 Jack has time-saving operating speed and lifting range, combined with the vital safety features which earned Simplex Jacks the only gold medal for safety. You cannot get a better jack for general maintenance work, for moving machinery, heavy crates and similar loads. This single-acting, ratchet lowering jack has long been industry's 1st choice for general work. Send for new Catalog No. 45.

Templeton, Kenly & Co.
Chicago 44, Ill.

Better, Safer Jacks Since 1899

SIMPLEX
WORLD'S MOST COMPLETE LINE OF
JACKS
LEVER
SCREW
HYDRAULIC

REMOVABLE TOP FOR LIGHT TRUCKS

Illustrations show Caravan Top, an all aluminum, heavy duck covered frame that converts the conventional pick-up





truck into a completely waterproof and weatherproof unit. Zippers on either side of the back make for easy opening; back curtain rolls up and holds up when desired. Frame is of high tensile aluminum, and will support a man's weight. The tops fit practically any standard make pickup built from 1940 to 1946 as well as the majority built prior to 1940,—trucks ranging from ½ to 1½ tons. Printed matter available from C. K. Turk Corp., 1122 Mishawaka Ave., South Bend, Indiana.

FIBERGLAS MAT REINFORCEMENT FOR PLASTIC LAMINATES

A new material designed for plastics reinforcement, known as Fiberglas Mat, Series X-30,000, is announced by Owens-Corning Fiberglas Corporation, Toledo, Ohio. The mat is composed of continuous glass filaments bonded with a vinyl resin.

As the glass filaments are drawn and wound on forming tubes, they are lubricated with a compound that has a chemical affinity for the glass fibers as well as for the commonly used polyester-type resins. The fibers are then cut off the forming tubes and separated into loose packs. Subsequently the packs are formed into mats bonded with vinyl resin.

A vinyl resin is used to hold the glass fibers in mat form because the resin may be softened either by heat or by solvents in the usual contact-pressure resins. This property makes it possible for the fabricator of formed parts in which the mat is the reinforcing material, to form the mats by applying heat alone, or by impregnating the mat with the resin that is being used. Hence the laminator may choose either method to stretch the mat and form it to the contours of the mold.

Test Samples

The Fiberglas mat is 5 one-hundredths (0.05) of an inch thick and weighs 1.5 ounces per square foot. Test samples of Fiberglas-mat-reinforced laminates show the following strengths: tension, 20,000 pounds per square inch; compression, 25,000 pounds per square inch; flexure, 35,000 pounds per square inch; modulus in flexure, 1.3 x 106; impact (izod), 15 foot pounds per inch of notch. Wet strength of the test samples was 90 per cent of original flexture strength after 24 hours submersion in water.

Specific gravity of the test specimens was 1.55. The specimens were approximately one-fourth inch thick. They were cured at 150 to 200 degrees, Fahrenheit, for 20 minutes, and were subsequently cured at 250 degrees, Fahrenheit, for 40 minutes.

METAL COATED ARTICLES

A new use for glycerine is given by W. W. Hamel in U. S. Patent 2,400,304, advises the Glycerine Producers Assn., 11 W. 42nd St., N. Y. This document describes a method whereby materials ordinarily burned or damaged by heat may be coated with a continuous and air-impervious layer of metal which is sprayed on in the molten state. The secret of the process lies in the use of glycerine solutions which act as protective liquids that vaporize during the actual spraying without leaving a residue.

Such a protective liquid may consist of a mixture of equal parts of glycerine and water, but the proportions may be varied, even to practically excluding water. The first step is to wet the material with the glycerine-containing protective liquid. The molten metal may then be sprayed on by any standard process. Spraying must be done rapidly — in a matter of seconds; the time element depending on the temperature of the spray and other factors.

The method is applicable to paper, wood, plywood, leather, textiles, regenerated cellulose sheets, rubber and also to various plastics, glass, and ceramics. Sprayable metals used in the molten state include aluminum, copper, gold, silver, zinc, tin, brass, and even various stainless steels.

With this glycerine-ultilizing process, the metal coating adheres so firmly that the articles can be subjected to mechanical stresses without danger of separating. The coatings can be buffed or polished or given other finishing treatments.

If desired, such coated articles may be plated, the metal coating or layer serving as a conducting cathode. The use of non-conducting "stop-offs" permits the creation of various decorative effects. Papers coated with a thin layer of aluminum or tin by this process have proved to be impervious to air and liquids and are admirably suited for use in packaging foods.



SEAMLESS TUBING



INDUSTRY asked for a seamless tubing with high magnetic permeability, uniform ductility, softness, toughness, and corrosion resistant properties. We supplied it in Globeiron Seamless Tubing. Because of its right combination of all these properties, Globeiron is extensively used in the electrical and radio industries; housings for generators and motors are frequently fabricated from Globeiron. It is extensively used for many pressure tubing applications. It can be worked hot or cold.

Some of your tubing problems may be profitably solved through the use of Globeiron Seamless Tubing. Globe engineers, Globe laboratory facilities are at your service. Write for Bulletins 109A and 113.

GLOBE STEEL TUBES CO.
MILWAUKEE 4, WIS., U. S. A.

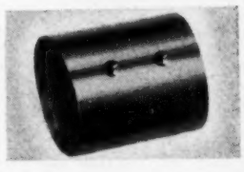
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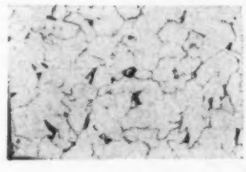
Globeiron is a high purity, low carbon iron, often known as "ingot iron". The physical properties of Globeiron make it ideal for difficult forming operations.

High Magnetic Permeability

(Generator Housing)

Housing for generators and motors may be thinner and lighter when made of Globeiron. The shell of the Dynamotor shown here is an example of Globeiron adaptability.





Under the microscope (mag. 200x Nital Etch) Globeiron shows a uniform structure of almost pure ferrite with only occasional patches of pearlite.

★ PRESSURE TUBES
★ MECHANICAL TUBING
★ CONDENSER & HEAT EXCHANGER TUBES ★ GLOBEIRON HIGH PURITY IRON SEAMLESS TUBES
★ GLOWELD WELDED STAINLESS STEEL TUBES ★ SEAMLESS STAINLESS STEEL TUBES



NEW ALUMINUM ALLOYS CATALOG

Aluminum Alloys Corporation, Detriot, has prepared a new, fully illustrated catalog describing its facilities for production of sand or permanent mold aluminum castings and Ray Day pistons, either castings or fully machined pistons. The book also contains tables on the chemical and physical properties of aluminum alloys, plus a section of the general characteristics and uses of aluminum. Write Aluminum Alloys Corporation, 7447 St. Aubin Avenue, Detroit 11, Michigan.

NEW TEXTILE INSTRUMENT INTRODUCED

A new tensometer, designed for accurate measurement of tension in a strand of thread, yarn or cord with a range up to 100 pounds, has been developed by Walter Kidde & Company, Inc., Belleville, N. J.

Clipped on a moving, continuous cord, the tensometer measures tension directly in pounds. Rapid fluctuations are recorded with little or no error because of the sensitive movement of the members.



Tensometer accurately reads tension directly in pounds

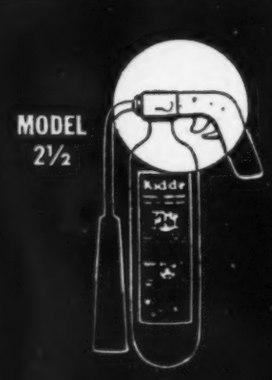
The handle and frame of the new instrument are made of alluminum alloy and finished with a black anodic coating. The grooved wheels which carry the cord are of stainless steel and are mounted on precision ball bearings. Accuracy of the measurement is unaffected by either time or hard use.

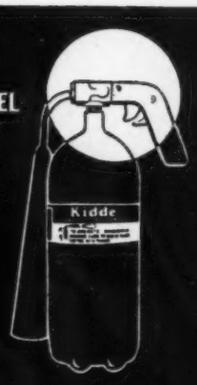
Recently, Walter Kidde & Company entered the textile machinery field. In addition to its regular line of equipment for fire detection and extinguishing, the company is manufacturing a tension and density control device for precision winding as well as machinery to be used under the "Fiber-Bonded" process developed by the Riverside and Dan River Mills.

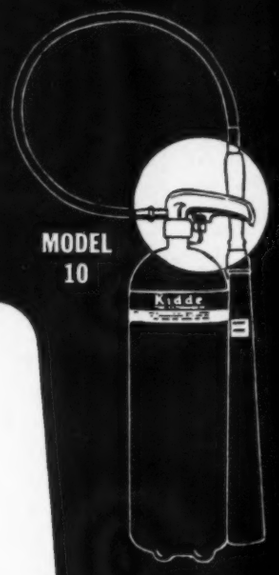
NEW GEAR LUBRICANT

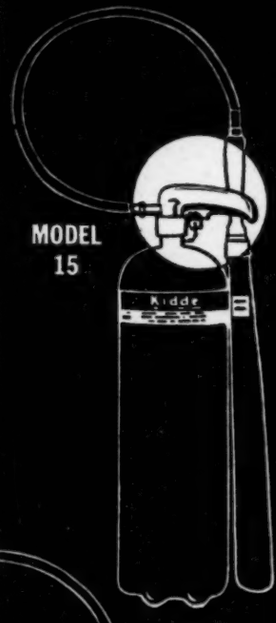
A lubricant which is easily brushed or sprayed on open gears is announced by The Texas Company. The new lubricant, called *Texaco No. 2-X Fluid*, contains a base material which has high adhesiveness, cut back with a non-inflammable solvent. This combination results in a lubricant which is both efficient and easy to apply.

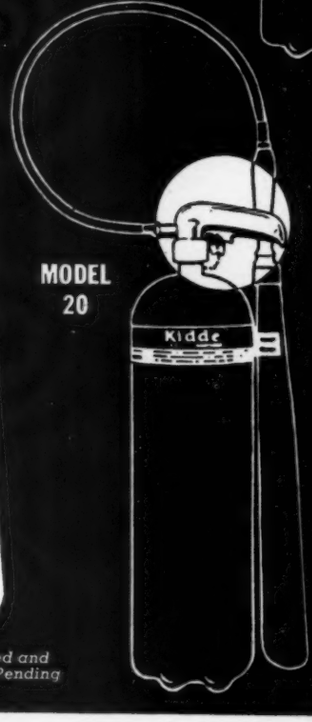
(*Turn to page* 206)











Now on *EVERY* Kidde Portable Extinguisher...

Trigger-Finger Control!

From the compact Model 2½ to the powerful Model 20, every Kidde Carbon Dioxide Portable works the same quick, simple, easy-to-use way:

Aim at the fire—pull the trigger!

That's the natural way to fight a fire—the way that any novice can grasp.

Remember, too, that Kidde Portables — discharging dry, clean carbon dioxide — are deadly to fires—in flammable liquids or electrical apparatus—but *harmless* to equipment and materials. No contamination of liquids . . . no corrosion of metals. No after-fire mess.

Carbon dioxide capacities: 2½, 5, 10, 15 and 20 pounds. Get the facts today!

Walter Kidde & Company, Inc.
1150 Main Street, Belleville 9, New Jersey

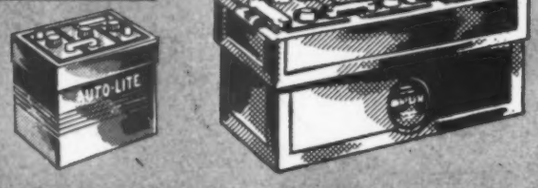
The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Kidde

Patented and Patents Pending

AUTO-LITE

BATTERIES



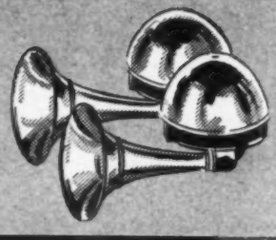
GOVERNORS



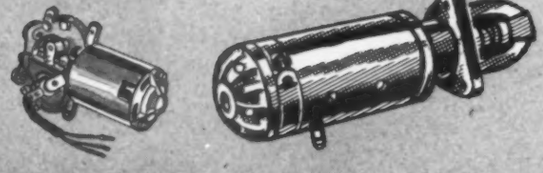
BUMPERS



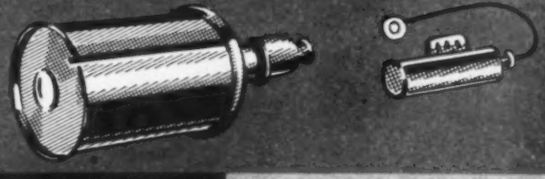
HORNS



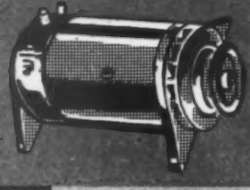
MOTORS



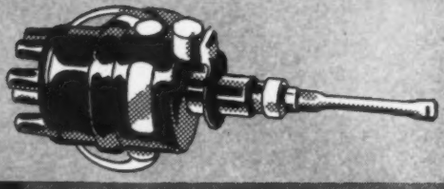
COILS & CONDENSERS



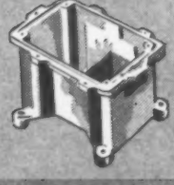
GENERATORS

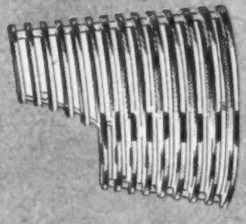


DISTRIBUTORS



DIE CASTINGS





METALS

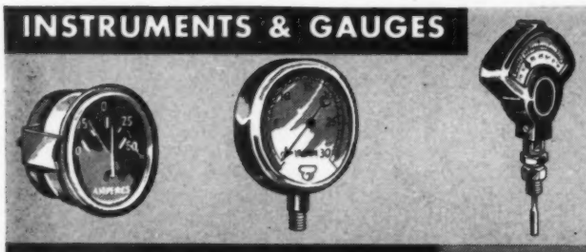


AUTO-LITE MEANS PRECISION MANUFACTURING

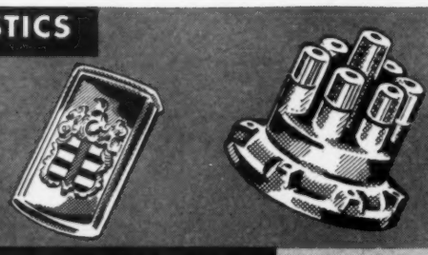
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PLASTICS



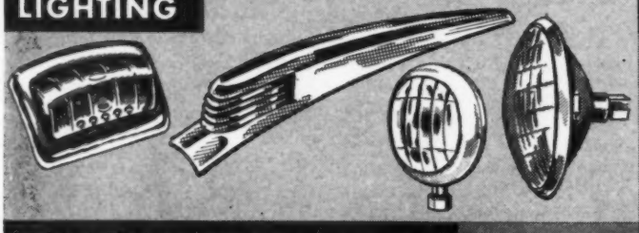
REGULATORS & RELAYS



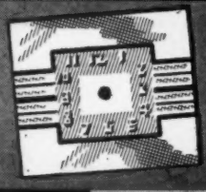
PLASTICS & METALS



LIGHTING



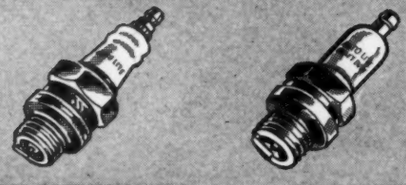
ORNAMENTATION OF METALS



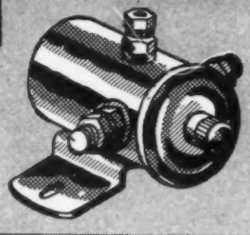
AVIATION SPARK PLUGS



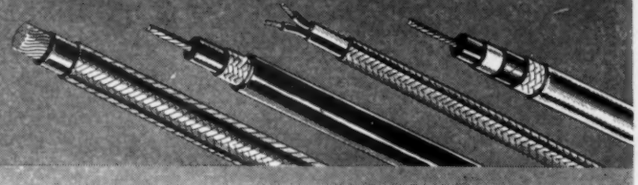
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MAKES A 12,000 MILE TRIP!

This steel rice bowl, now shipped in great quantities to China, is being finished with BLACK-MAGIC. BLACK-MAGIC was selected because its easy, fast workability makes it possible to impart good corrosion resistance as well as attractive appearance at a very nominal cost.

BLACK-MAGIC is more than just a "blackener." It is an *integral* finish, with penetration of .0001". Very flexible. Forming can follow processing. Also an excellent bond for paint and lacquer. Chemical reaction at 300°F. For all steels except stainless. There are also BLACK-MAGIC baths for zinc, copper, brass and cadmium. Send for samples aand the interesting "Black Book."

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- Weighs only 1¾ pounds!
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- New Design Features!

New in design, new in convenience, new in service — the Huppert Portable Pyrometer has departed from the conventional portable Pyrometer specifications to fully meet the needs of today. This novel departure provides complete protection to face of instrument in all resting positions and perfect reading of the scale without neck stretching. Accuracy to 2% of scale. Duo range scale — 0 to 500° and 0 to 1000° F., or 0 to 750° and 0 to 1500° F., or 0 to 1000° and 0 to 2000° F., or equivalent ° C. Special ranges to order. Overall length of instrument, 11". Cast aluminum body sealed against dust and fumes. Durable handle. Rubber legs. Also available as surface type.

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Instrument Division
5868 Cottage Grove Ave. Chicago 37, Ill.

TELLS HOW "INDUSTRIAL LOGISTICS" REDUCES PROCUREMENT COSTS

One of the simplest, most effective methods for handling materials and manufactured products economically and safely is outlined in "Industrial Logistics", a twelve-page, illustrated booklet issued by Elwell-Parker Electric Co., Cleveland.

Subtitled "A Survey for Management", the booklet explains how a planned system of materials transportation reduces costs in procurement, production and distribution of goods. Outstanding examples of economics are cited, such as a reduction of $20.65 per car in unloading sheet metal, $41.00 per car in unloading bagged materials; a saving of $64.00 a day through utilizing full warehouse capacity.

Industrial Logistics is said to effect savings through using the correct type of containers, such as boxes, barrels, bags and bales; assembling standardized sizes of the individual containers in Master Unit Loads on pallets or skids and then transporting them by means of power industrial trucks. Instead of handling a few pounds at a time, manually, the principle is to handle many pounds, or tons, mechanically at one time.

According to the booklet all containers in which materials and products generally are shipped can be catalogued in the four basic types. Even products requiring no outer protection can be included in one of the classifications, as for example, large rolls of paper are similar in some respects to barrels. Boxes, barrels, bags and bales, therefore, are common denominators in every division of industry; all can be built into Master Unit Loads, to be transported anywhere on pallets or skids.

Advantages of the System

Accordingly, the basic conception of Industrial Logistics can be defined as: "Receive everything in Master Unit Loads; transport everything through processing in Master Unit Loads; and ship Master Unit Loads to your customers." Production advantages of the system are speed, with safety; sales advantages are lower selling prices, and strong sales argument; traffic advantages, faster handling, quicker shipments.

The booklet emphasizes the fact that handling operations greatly increase costs of an article while adding little to its value. Profits in the future will depend to a greater degree upon management's ability to avoid or squeeze the cost of waste out of production and distribution. As compared with many other elements of cost, load transportation offers the best opportunity for effecting economies.

Auxiliary booklets entitled "Logistics of Boxes", "Logistics of Barrels", "Logistics of Bags" and "Logistics of Bales" also have been prepared.

Copies of any or all of these booklets may be obtained by addressing The Elwell-Parker Electric Co., Cleveland, or its field representatives.

* RICHARDSON MEANS *Versatility* IN PLASTICS



Don't Look Now—But Here it Comes!

What's the mystery... here *what* comes? Chances are, it's a problem in plastics. We get them every day. It may involve an insulating part for an electrical application, or a non-corrosive part for chemistry. It might turn out to be a quieter streetcar bearing, collector rings on a power shovel, or thread advancing reels for textile applications. Whatever it is... Richardson *versatility* will soon have it solved.

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INSUROK *Precision Plastics*



***RESEARCH**
... a continuous transformation of possibilities into practical ideas in plastics.



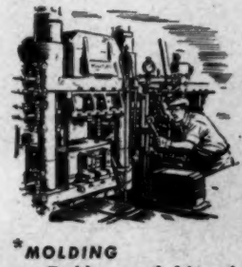
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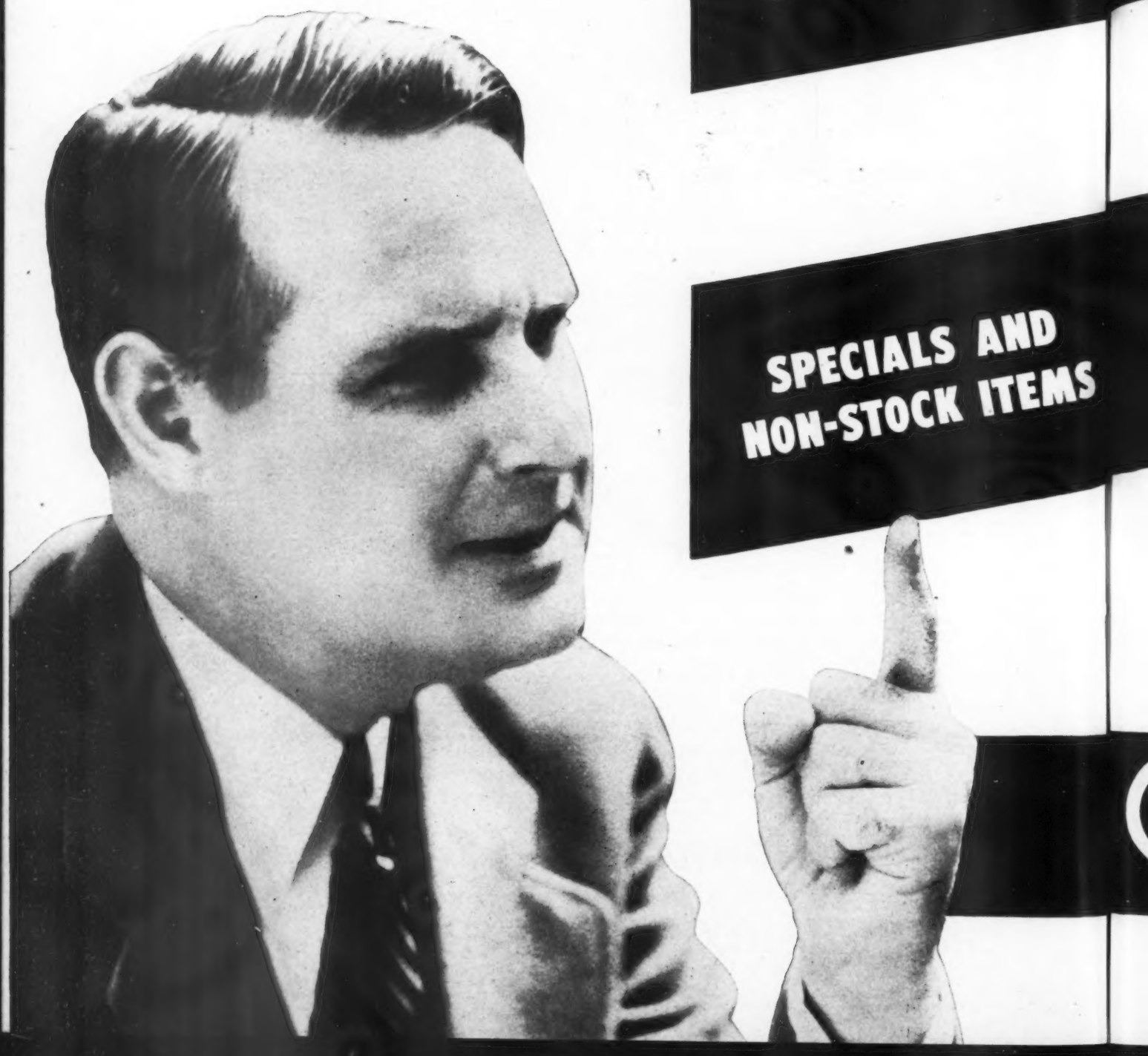
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NUTS AND BOLTS...





YOUR INDUSTRIAL SUPPLY DISTRIBUTOR

No one is in a better position to give you what you want, when you want it than your industrial supply distributor. For all standard "stocked" Circle Ⓑ nuts and bolts, call him in. You'll make your purchasing more efficient by benefiting from his prompt, intelligent service.

BUFFALO BOLT COMPANY REPRESENTATIVE

Your local Circle Ⓑ representative is the man to see whenever you wish to purchase specials, non-stock or production items. Remember his extensive personal experience in this highly specialized field is backed up by a rich background of manufacturing skill consisting of many years experience in producing nuts and bolts of all types *of which the uniform quality is controlled from billet to bolt in one single plant.*

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How many wipes in a wiper?

here's why "KEX" WIPING TOWELS have hundreds of more wipes

One look at a KEX Industrial Wiping Towel tells you you're going to get greater performance. Just compare! Every square inch of a KEX Wiping Towel is usable wiping surface—no buttons, hooks, hard seams as with ordinary rags, no loose threads to catch in machinery. KEX Wiping Towels are soft and safe for delicate surfaces—yet tough enough for any job in the shop.

Every KEX Wiping Towel is uniform in size—easier to distribute and keep track of . . . uniform and BIG enough for any wiping job in the plant. And KEX Industrial Wiping Towels are always on hand—delivered as often as necessary—cleaned by a *special* high-heat process. No need for huge piles of inflammables taking up valuable space, creating a fire hazard.

Rent KEX Wiping Towels and Figure Your Profits

Why put up with the inefficiencies of sub-standard wiping materials another day? Install the KEX Wiping Towel system today, improve performance and *save* on wiping costs. There's nothing to buy, no expensive inventory—just a low monthly rental. For complete information, phone your local KEX representative, now—or write KEX National Service, 295 Fifth Avenue, New York 16, N. Y.

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FLUORESCENT SERVICE MANUAL PUBLISHED BY SYLVANIA ELECTRIC

The "most complete" Fluorescent Service and Maintenance Manual yet published has been announced by Sylvania Electric Products, Inc. This 80-page book, written for electrical contractors, wholesalers, lighting engineers and electricians, contains full details on fluorescent lamp operation and the various problems encountered in the maintenance of fluorescent systems.

In addition to text material on trouble shooting, testing procedures and cleaning methods, there are many illustrations and diagrams of different circuits and test equipment which can be built in electrical



80-page manual complete with cross reference and glossary of terms.

shops. The manual is conveniently pocket-sized so that it can be carried on the job or filed for ready reference.

Complete with index, the manual also contains a helpful cross reference and a glossary of terms used in fluorescent lighting. The manual costs $1.00 and can be had by writing to Sylvania Electric Products Inc., Dept. MA-3, 211 Derby Street, Salem, Massachusetts.

TRUING OR DRESSING WHICH IS IT?

While the terms, "truing" and "dressing" are often used interchangeably and there is admittedly some overlapping of the two operations, each is performed with a different purpose in mind, says The Norton Company's Grits and Grinds.

The Purpose of Truing

A grinding wheel is *trued* in order to *restore* its cutting face to running truth, so that it will produce perfectly round (or flat) and smooth work; or to *alter* the cutting face for grinding special contours. Since no ground work can be any more accurate than the abrasive wheel that produced it, the importance of proper truing cannot be overestimated.

When truing for rough grinding the wheel is fed into the diamond about 0.001" and the diamond traversed across the wheel at a medium rate. The wheel should be fed in about the same amount for each pass of the diamond until a perfectly round wheel is assured.

Truing for finer finishes consists of reducing the table traverse or the speed

(*Continued on page* 214)

Research Pays Off *Again*





The Udylite Plating Barrel has always been outstanding for durability and long service life. Now the Udylite research staff has added practically 100% to its value by the use of a new material "Melamine Plastic" plus a new construction technic that gives the barrel much greater strength and completely insulates the structural members.

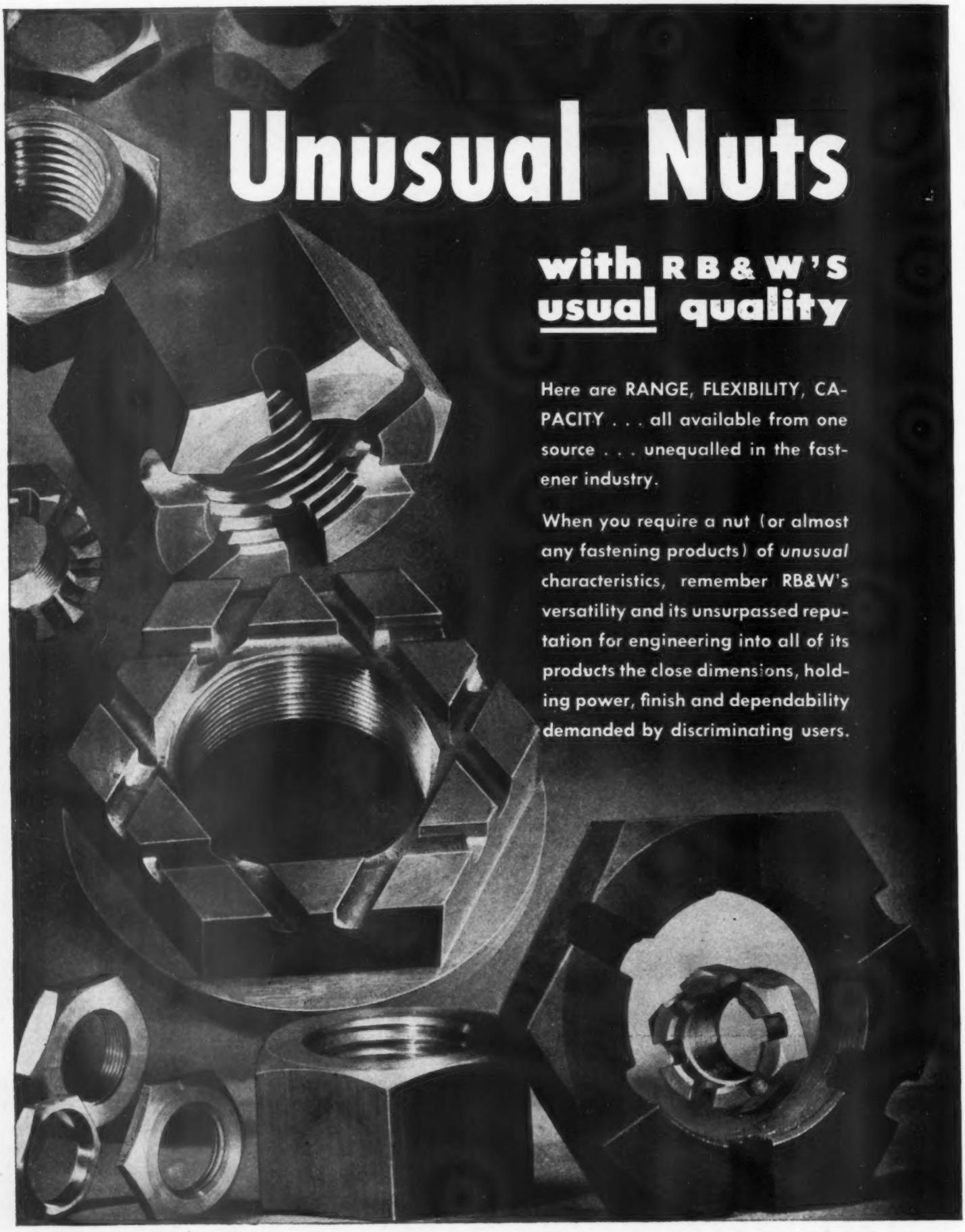
It's now being used for both alkaline and acid solutions. It's interchangeable with other older Udylite barrels and will stand up under extremely severe service with a negligible amount of maintenance.

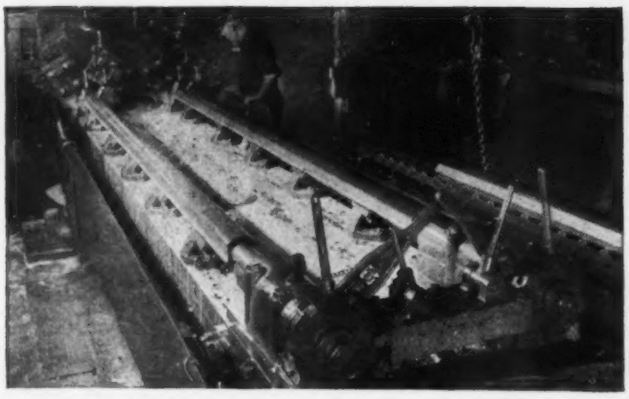
It might be hard to believe all these things of this new barrel if they had not been proved in actual service and just as stated.

Now when you need additional plating barrels do not fail to have a look at the new Udylite Melamine Barrel.

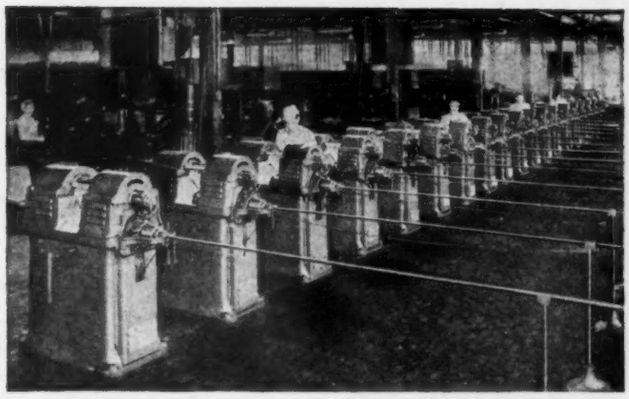
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THE *Udylite* CORPORATION
1651 EAST GRAND BOULEVARD
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REPRESENTATIVES IN ALL PRINCIPAL CITIES

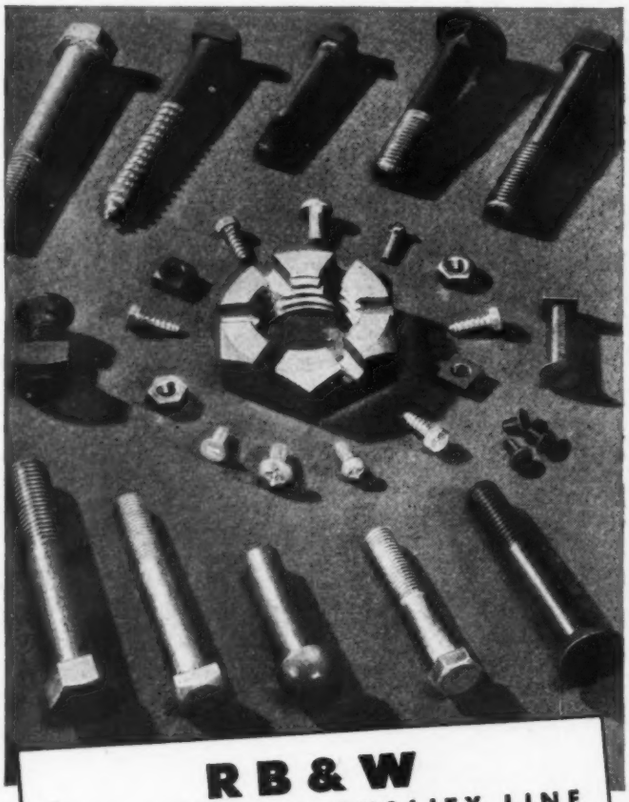

Unusual Nuts
with RB&W'S usual quality
Here are RANGE, FLEXIBILITY, CAPACITY . . . all available from one source . . . unequalled in the fastener industry.
When you require a nut (or almost any fastening products) of *unusual* characteristics, remember RB&W's versatility and its unsurpassed reputation for engineering into all of its products the close dimensions, holding power, finish and dependability demanded by discriminating users.



RB&W HAS EQUIPMENT for handling nuts of almost any size. This immense machine planes hot-forged round bars down to hexagonal shape for fabrication of some of the largest nuts.



A GLIMPSE OF ONE SECTION of the Screw Machine Department at RB&W's Coraopolis plant. Here are made nuts of extra thickness or special material — nuts to specifications which make efficient cold-punching impractical.



RB&W

THE COMPLETE QUALITY LINE

For the utmost in uniformity and dependability, rely upon RB&W's complete line of bolts, nuts, screws, rivets and allied fastening products . . . the result of 101 years of continuous advancement in machinery, methods and quality control.



THIS SLOTTER ILLUSTRATES the efficiency of RB&W's secondary equipment. Many new machines round out facilities for producing nuts for a wide variety of applications — to highest standards of quality.



THESE CARBURIZING FURNACES for surface-hardening are one of many types of equipment in which nuts and other products receive specialized treatment dictated by the customer's individual requirements.

101 YEARS *Making strong the things that make America strong*

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill. *Sales Offices at:* Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle. *Distributors* from coast to coast. By ordering through your distributor, you can get prompt service for your normal needs from his stocks. Also, the industry's most complete, easiest-to-use catalog.



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• AMERICA'S FIRST WIRE FENCE •



● The first woven wire fence, made 63 years ago, bore the name PAGE. Since then the makers have pioneered in many developments to provide betterments in fence quality and service, including Page *Chain Link* Fence. And now you can again have this sturdy, long-lasting fence in a choice of four superior metals to best meet your needs. Page Aluminum. Page Copper-Bearing Steel, heavily galvanized. Stainless Steel and Page Armco Ingot Iron. When you choose Page Fence you deal with a nearby firm which is technically trained, long experienced and reliable. Write to any office listed below for fully illustrated information you should have.

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MORE THAN 70 OAKITE MATERIALS

to solve your production cleaning problems

Here's Sense that Saves you Dollars!

There's no getting around it. You've got to play it close to the vest these days. Soaring material-production costs put a big kink in profits . . . get you to thinking of ways and means to cut costs to the bone.

As a starter why not check your production-maintenance cleaning costs? Maybe your cleaning methods can be revised along more economical lines. For example, if you're seeking a speedier tank cleaning method, durable coolant for cutting operations . . . effective derusting, descaling, degreasing or paint-stripping procedures, look over the long list of lab-tested, job-proved Oakite materials. It's a safe bet that you'll find the cleaning material you need to do the job better—at a saving of both money and muscle.

If you need a hand while checking your cleaning procedures—call your nearby Oakite Technical Service Representative. His suggestions may save you a pretty penny! His services—yours FREE!

OAKITE PRODUCTS, INC., 54 Thames St., NEW YORK 6, N. Y.

Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE *Specialized* CLEANING

MATERIALS · METHODS · SERVICE · FOR EVERY CLEANING REQUIREMENT

(*Continued from page* 210)

of the truing tool to the slowest consistent with the finish desired. At the same time the feed of the wheel into the truing tool is reduced. For every fine finishes it is advisable to make the last two or three passes of the truing tool across the wheel without any infeed whatsoever.

In all truing the diamond is presented to the wheel face at about a 10° to 15° drag angle.

The Purpose of Dressing

A grinding wheel is *dressed* in order to *improve* or to *alter* its cutting action.

The dressing tool removes the outside layer of dulled abrasive grains and any loading of metal or foreign material that the wheel may have picked up, so that new and sharp grains are presented to the work. In this respect, dressing may be thought of as a sharpening operation.

If a wheel breaks down sufficiently of itself so as not to require dressing, very likely it is too soft to give a satisfactory finish or economical wheel life.

Dressing a wheel does not necessarily true it. For example, if the wheel face is opened up by dressing it to a coarse surface so that it will cut fast on rough grinding, the wheel may actually be a trifle out of round (or out of parallel) and still serve its purpose of removing stock rapidly without any regard for finish.

BUILT-IN PALLETS ON SKID BOXES PERMIT QUICK DUMPING

A well-known and progressive manufacturing company has simplified the handling of metal scrap from machining, stamping and cutting operations by adding what might be termed "built-in" pallets to the conventional skid boxes used to collect this material. With these attached pallets, an Elwell-Parker electric power truck equipped with a swivel mounted fork, picks up fully loaded boxes for transport to the loading platform where they are elevated and upended for quick dumping of the scrap into street trucks.

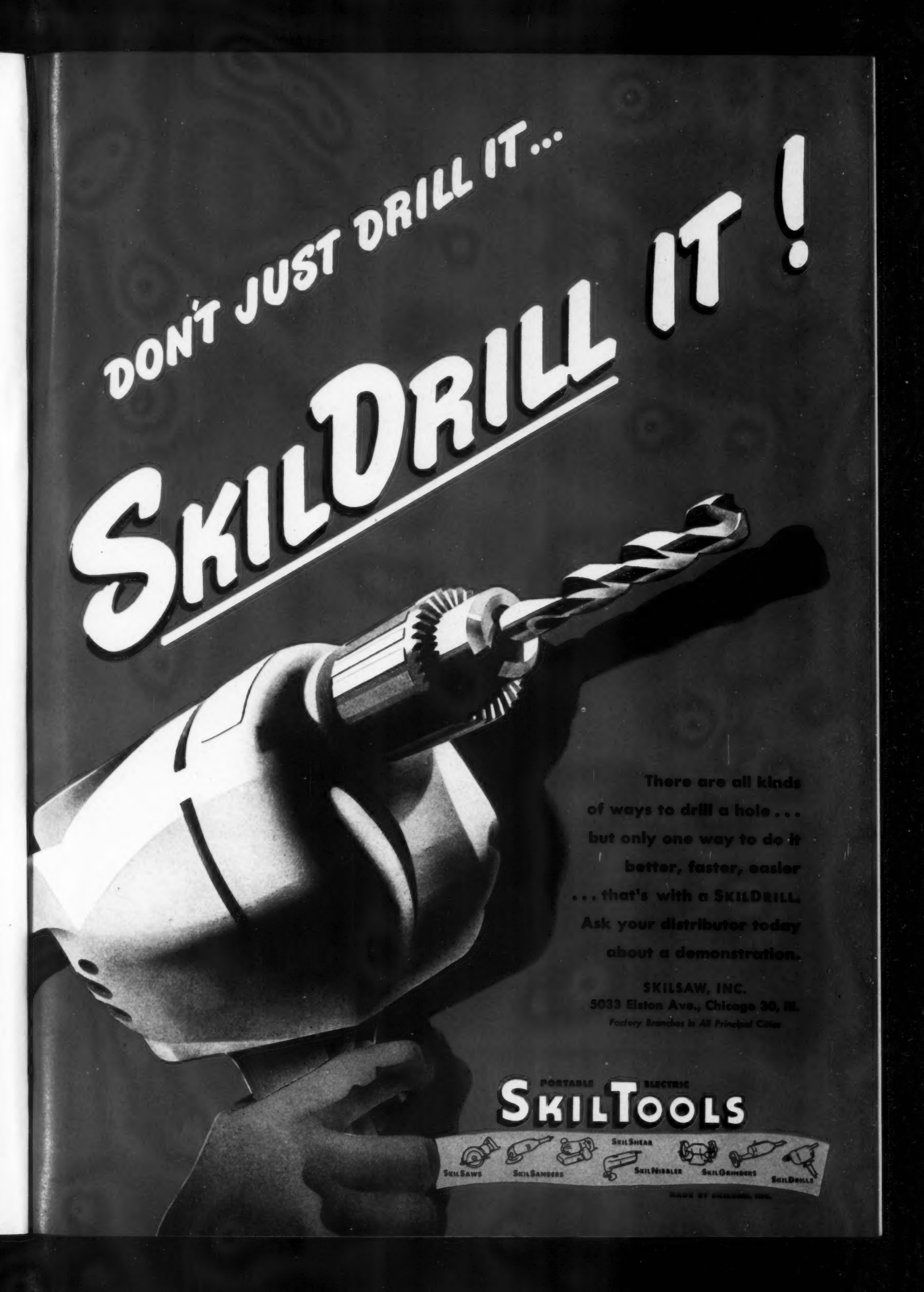
Many ingenious devices and methods have been developed for dumping loads from receptacles by means of power trucks, but this is one of the easiest to duplicate, and most effective.

Instead of resting on skids in the usual manner, the boxes have false bottoms, open at two ends. A steel plate as long as the box is turned up at a 90-degree angle for 5 inches at each side of the box. The upper edges of these bent-up sections are then welded to the lower edges of the box, thus forming a trough, or pallet, about 4 inches deep, integral with the box.

In operation the fork is thrust into the pallet opening, the load lifted and conveyed to the shipping platform. When the box is turned upside down to empty the contents, it is held securely to the fork by means of the bottom plate.

This is accomplished without having

(*Continued on page* 216)


DON'T JUST DRILL IT...
SKILDRILL IT!
There are all kinds of ways to drill a hole . . . but only one way to do it better, faster, easier . . . that's with a SKILDRILL. Ask your distributor today about a demonstration.
SKILSAW, INC.
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PORTABLE ELECTRIC
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NOTHING PROTECTS LIKE *Rawhide*

AND THERE'S NOTHING LIKE

CHICAGO *Rawhide*

Cushioned power—that's rawhide. Hammers and mallets made from this tough, resilient material deliver the *most* power with the *most* protection. Your fine finishes, your expensive machined parts are much less likely to be damaged when you insist upon rawhide.



C/R coiled rawhide hammer faces may be quickly replaced in the permanent malleable iron heads.

Your Guarantee

Here is why the best in rawhide is Chicago *Rawhide: C/R's ultra-careful hide selection . . . special seasoning and manufacturing processes . . . 58 years' experience in working rawhide . . . top quality standards.*

CHICAGO *Rawhide* MFG. CO.

1203 ELSTON AVE. • CHICAGO 22, ILLINOIS

(*Continued from page* 214)

to change attachments or interfering with the usefulness of the truck for other handling operations. In fact, the same truck tiers loaded skid boxes five-high whenever it is desired to store the scrap in minimum space awaiting favorable conditions for disposal.

* * *

MORE RUBBER FOR TRUCK AND BUS TIRES

Truck and bus tires will receive a substantial share of the 11,000 additional long tons of natural rubber which is now made available to industry each month, W. James Sears, Director of the Civilian Production Administration's Rubber Division, announced recently.

Explaining the general effects of Amendment 2 to Appendix II of the rubber order, R-1, Mr. Sears said that special service tires, such as logger and off-the-road service tires, which are subjected continuously to severe wear will also contain high percentages of natural rubber.

Pneumatic casings with cross section 8.25 inches and larger of both highway and mud and snow tread design may be made with 94 per cent natural rubber. The same percentage may be used in the production of large airplane tires for transport and bomber service and for the large special purpose tires mentioned above. In many sizes this is an increase from 67 per cent formerly allowed.

Smaller truck and bus tires and smaller size special purpose tires 7.50 inches and down will hereafter contain 67 per cent of natural rubber. Formerly various tires in this group contained 13, 23, or 33 per cent natural rubber.

During the war, because of the acute shortage of natural rubber and because synthetic rubber lacked resistance to heat build-up, it had been freely admitted that truck and bus tires were not capable of giving prewar performance. The previous increases of natural rubber for truck and bus tires, permitted last March, put an improved tire on the road for the present hot weather driving. The additional amounts of natural rubber authorized today will add somewhat to tire performance in some of the types and sizes, Mr. Sears said.

The two groups of tires mentioned above (8.25 inches and larger, and 7.50 inches and down) contained more than 50 per cent natural rubber and hereafter will have no special identification in the way of a letter or number marking.

Passenger, motorcycle, small tractor, implement and industrial pneumatics may be now made with as much as 13 per cent natural rubber as against the 2.5 per cent previously permitted. However, other pneumatic tires, such as bicycle, will continue to be made with 2½ per cent natural rubber.

Camelback for the recapping of airplane and large truck tires, 14.00 inches and up, may now be made of all natural rubber.

(*Turn to page* 220)



. . . in modern moldings fabricated of

Stainless moldings, economically produced in volume with Superior Stainless Strip Steel, provide protection with beauty, brilliance and *permanence.*

Choose SUPERIOR for your moldings fabrication, and get the benefits of *easier handling* through precision composition, exact temper, uniform dimensions and long coil lengths in the right grades for the job!

Superior

STAINLESS STRIP STEEL



SUPERIOR STEEL CORPORATION

CARNEGIE · PENNSYLVANIA



"WINNERS

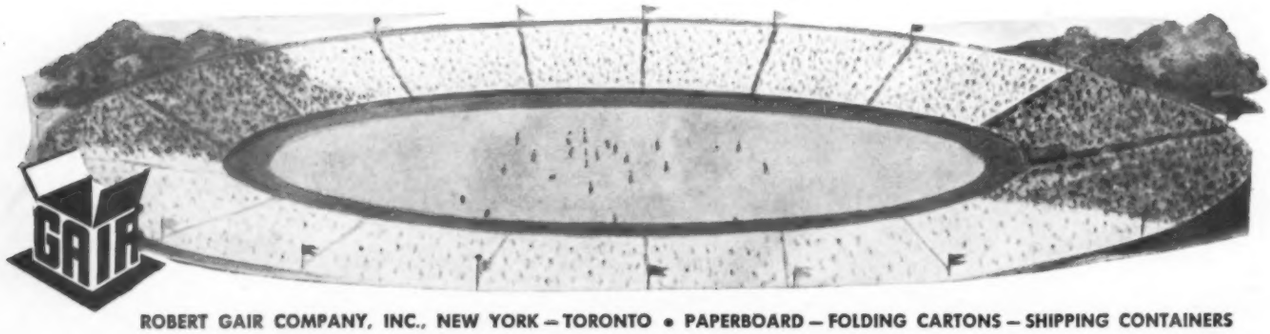
invariably have speed . . . precision . . . and skill" . . . says Robert Gair

High speed packaging machinery must have the uniform precision of a "tailor made" carton...folding cartons that embody the technical skill and "know-how" so consistently displayed by ROBERT GAIR over a period of more than eighty years.

GAIRanteed cartons are consistently WINNERS in fields of keenest competition.

28 PHOTOGRAPHS OF POST-WAR AUTOMATIC PACKAGING MACHINES

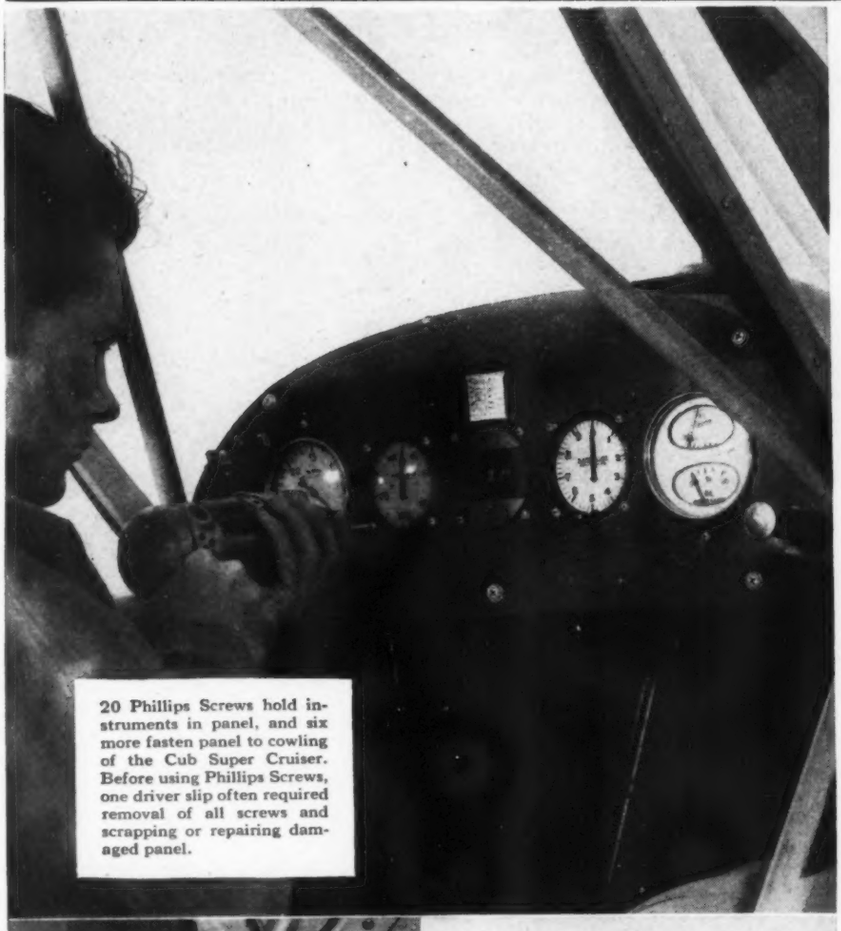
Write for 22-page descriptive brochure, featuring 28 photographs of POST-WAR automatic packaging machines.



ROBERT GAIR COMPANY, INC., NEW YORK — TORONTO • PAPERBOARD — FOLDING CARTONS — SHIPPING CONTAINERS

"DRIVE TWICE AS FAST"

—Phillips Screws help Piper build 1100 Cubs a month!



20 Phillips Screws hold instruments in panel, and six more fasten panel to cowling of the Cub Super Cruiser. Before using Phillips Screws, one driver slip often required removal of all screws and scrapping or repairing damaged panel.



Fastenings near fabric covering – no place for driver slips – no slips with Phillips Screws.



The 20,000th Piper Cub, completed June 1946. Phillips Screws speeded this big production!

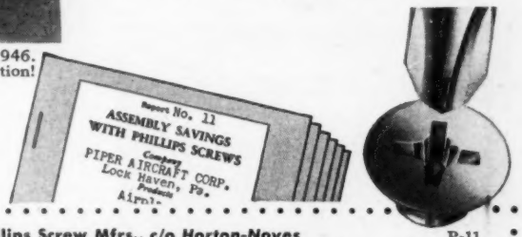
"We started using Phillips Screws back in 1938, when . . . and because . . . we were getting set for large scale production," declared Piper's Assistant Chief Inspector to the James O. Peck Co. investigator, studying assembly savings with Phillips Screws in well-known plants. "Today we're shipping our 20,000th Piper Cub. That proves how much faster Phillips Screws are to drive.

"IDEALLY SUITED TO POWER DRIVING, which we needed for high production. Unlike slotted screws, Phillips Screws hold the driver bit in place without a guide or other support, automatically center themselves in the screw holes and catch the thread quicker. Phillips Screws are easily twice as fast to drive.

"TAKES LESS TIME TO MAKE SKILLED ASSEMBLERS. It takes a man much less time to become familiar with and do a good job of driving Phillips Screws. Since the Cub is fabric covered, any driver slips would cost us expensive, undesirable patching, doping and repainting . . . up to $1.00 a slip. Same thing on the instrument panel where a single driver slip would cost up to $3.50. If we were using slotted screws, assemblers would have to go much slower, especially at the learning stage, to avoid such damage.

"WE GET A BETTER INSPECTION. Don't have to watch out for burred heads as we used to do with slotted screws. Fabric tears and instrument panel scratches are out. And the Phillips Recessed Head certainly makes a more attractive, workmanlike job wherever screw heads are exposed."

GOOD IDEAS FOR YOUR ASSEMBLY LINE in this independently made report of Piper's assembly savings with Phillips Screws. Similar studies . . . covering metal, wood and plastic products . . . available to you without cost or obligation. Use the coupon TODAY!



PHILLIPS *Recessed Head* SCREWS

Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

26 SOURCES

American Screw Co.
Atlantic Screw Works
Atlas Bolt & Screw Co.
Central Screw Co.
Chandler Products Corp.
Continental Screw Co.
Corbin Screw Div. of American Hdwe. Corp.
The H. M. Harper Co.
International Screw Co.
Lamson & Sessions Co.
Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation
Pawtucket Screw Co.
Pheoll Manufacturing Co.
Reading Screw Co.
Russell Burdsall & Ward Bolt & Nut Co.
Scovill Manufacturing Co.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wolverine Bolt Company

Phillips Screw Mfrs., c/o Horton-Noyes P-11
2300 Industrial Trust Bldg., Providence, R. I.

Send me reports on Assembly Savings with Phillips Screws.

Name.....

Company.....

Address.....

.....



Darnell Double Ball-Bearing Casters and E-Z-Roll wheels reduce floor wear to a minimum, lengthen the life of equipment and increase the efficiency of employees—Write for 192 page Darnell Caster and Wheel Manual.

A SAVING AT EVERY TURN

DARNELL CORP. LTD
LONG BEACH 4, CALIFORNIA
60 WALKER ST. NEW YORK 13, N Y
36 N CLINTON, CHICAGO 6, ILL

Schools Given Top Preference in Purchase of Machine Tools and Laboratory Equipment And Surplus Real Property

War Assets Administration recently set the wheels rolling on a mammoth nominal pricing program, designed to set bargain prices and give top preference to American schools and colleges in the purchase of surplus machine tools and classroom and laboratory equipment for use in training veterans enrolled under the G.I. Bill of Rights.

WAA, acting under a directive from the Civilian Production Administration, will slash through the priority system to award eligible institutions access to instructional equipment over all other buyers (except holders of CPA or NHA urgency certificates).

In addition, recognizing the emergency problems arising from the unprecedented enrollment of veteran students in schools throughout the nation, and the restricted budgets of such schools, WAA will sell this equipment to eligible educational buyers at a fraction of original cost—5 percent of the fair value (plus shipping charges).

WAA lists the following broad categories of equipment to be sold under the program: (1) electrical machinery and apparatus: (2) woodworking machinery and equipment; (3) metalworking machinery; (4) business education equipment; (5) heating equipment; (6) communications equipment and electronic devices; (7) furniture (for office, school, auditorium, laboratory, factory); (8) optical instruments and apparatus; (9) indicating, recording and controlling instruments and accessories; (10) professional and scientific instruments and apparatus; (11) engineering instruments.

The Federal Works agency will set the criteria to determine the legitimate needs of schools and colleges applying for property under this program. Only schools offering courses of training under Title II of the Servicemen's Readjustment Act of 1944, as amended, will be eligible.

Applications should be sent to the nearest division office of the Federal Works Agency, which, after screening and certification, will forward the orders to WAA to be filled.

The provisions of this program apply only to property located within the United States or its possessions, which has not already been advertised or publicly offered for sale.

Granted Top Priority in Securing Surplus Real Property and Third Priorty in Securing Personal Property

American schools and colleges will have free use of and quicker access to surplus government property suitable for classroom and laboratory work under procedures recently approved by War Assets Administration.

WAA's action grants educational institutions top priority in securing surplus real property and third priority, preceded only by federal agencies and World War II veterans, in securing personal property. The action is taken under Public Law #697.

Public Law #697 authorizes the Federal Works Agency to supply and equip temporary classrooms, laboratories, dining halls, infirmaries, administrative offices and other non-housing facilities for institutions which would otherwise be forced to turn away student veterans because of lack of equipment.

In the case of personal property, except that which is part of a real property installation, offerings will be made first to Federal agencies and to veterans. After the needs of these priority groups have been filled, disposal agencies may then transfer requested property to the Bureau of Community Facilities of the Federal Works Agency, which in turn, re-transfers it to the educational applicant.

In the case of real property, owning agencies or disposal agencies may make direct transfers to the Federal Works Agency. Where real property is equipped with furniture, fixtures or other facilities, these may be transferred as an integral part of the installation provided they are necessary to the operation of the property as a unit. Such a unit may not be split up by the applicant into its component parts.

Arthur G. Eaton, deputy director of the Public Interest Division, has been appointed chairman of the Committee to Implement Law #697. Mr. Eaton was formerly Director of the Government Bureau of the War Production Board and at one time served as the Director of Purchases for Dodge Brothers in Detroit, Mich.

Only public or non-profit educational institutions operating courses of training or instruction for student veterans are eligible for the acquisition of property under the terms of Public Law #697.

Any eligible school wishing to place a request for such property should contact the division office of FWA in the territory in which the school is located. A list of such offices may be obtained from the Federal Works Agency, Washington 25, D. C. Applications must be approved by the U. S. Office of Education.

The Federal Works Agency may not claim the right to use its federal priority for such transfers, since the Surplus Property Act (as amended) specifically states that property acquired under federal priority must be for the agency's own use.

All transfers shall be subject to the approval of the War Assets Administration.

(*Turn to page* 222)

SUPPORTING YOUR PLANT-WIDE

Safety Program

with

MINE SAFETY EFFICIENCY · PITTSBURGH, PA · SERVICE · SAFETY APPLIANCES CO.







APPROVED M·S·A SAFETY EQUIPMENT

The M.S.A. line of safety equipment is complete. You can *depend on M.S.A.* for quality, performance, comfort and durability in every one of the safety products required for the protection of your workers. Write for our new Catalog 6-B—most comprehensive ever issued to industry!

PROMPT M·S·A FIELD SERVICE

The M.S.A. District Office network covers the United States, placing trained M.S.A. representatives within your call at all times. Use our experienced counsel and skilled assistance in meeting your safety problems—without obligation, of course.

STRATEGIC WAREHOUSE STOCKS

Within range of your territory are M.S.A. warehouse stocks of equipment and supplies—speeding delivery of the items you need, when and where you want them. For every safety requirement, "go all the way with M.S.A.!"

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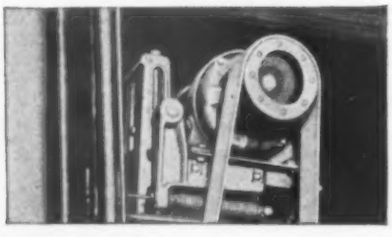
TOPONTO, MONTREAL, VANCOUVER, CALGARY, NEW GLASGOW, N. S.



When machines are stopped to take up belt slack — when difficult operating conditions prematurely destroy belting — that time and production has been lost forever. But — you can avoid *future* shutdown losses *now* by installing Schieren Leather Belts.

Schieren Leather Belts are quality-built to withstand the most torturing belt drive. They take oil, water and abrasive conditions in their stride . . . permit normal operating tension at all times . . . cover a greater pulley area and deliver maximum speeds — *extra* RPM. Yet, Schieren Leather Belts cost no more than other standard belts.

Chas. A. Schieren Company has been solving countless power transmission problems since 1868. Throughout good times and bad, we have maintained the superior quality — the thorough dependability of our leather belting. And, this same exceptional craftsmanship is applied to the manufacture of our packing and strapping specialties. For complete, specialized belting, packing and strapping service — look to Schieren. Our years of experience are at your service.







Let us send you free book on SHORT CENTER DRIVES data which show how pivot bases give

1. Automatic Belt Tension
2. Boost Overload Capacity of Drives.
3. Eliminate any possibility of slip.
4. Increase machine output.

We are national distributors of Rockwood Bases.

CHAS. A. SCHIEREN COMPANY
LEATHER BELTING • SPECIALTIES
HYDRAULIC PACKINGS
31 FERRY STREET, NEW YORK 7, N. Y.
60 Front Street, W. Toronto, Ont.

STEEL SHORTAGE HAMPERS WIREBOUND BOX PRODUCTION

Shortage of steel wire has created a new obstacle for wirebound box manufacturers who have been striving since the close of the war to achieve full production despite continuing scarcities of veneer and lumber.

Lack of critical materials already has reduced the industry's production to less than 50 per cent of capacity and the shortage of wire is taxing the ability of the manufacturers to maintain even this low rate of output, according to Mr. L. S. Beale, secretary of the Wirebound Box Manufacturers Association.

He pointed out that lack of containers has become a serious bottleneck in the flow of new products to consumer markets and warned that the nation's entire reconversion program will suffer if container manufacturers are unable to obtain adequate supplies.

"Practically every new product manufactured today must be packed in some type of container for shipment to its ultimate destination," Mr. Beale said. "Until it reaches the consumer or end user, no new product makes its complete contribution to industrial recovery."

Seeking a solution to the critical shortages, the Wirebound Box Manufacturers Association is sponsoring experiments at four universities and research laboratories to develop a new material which can supplement the veneer and lumber which goes into wirebound boxes and crates.

Early results of these experiments indicate that it may be possible to manufacture a suitable composition material of forest or agricultural waste products, according to Mr. Beale. He added, however, that it is still impossible to predict when the wirebound industry will be able to fill all the demands for its products.

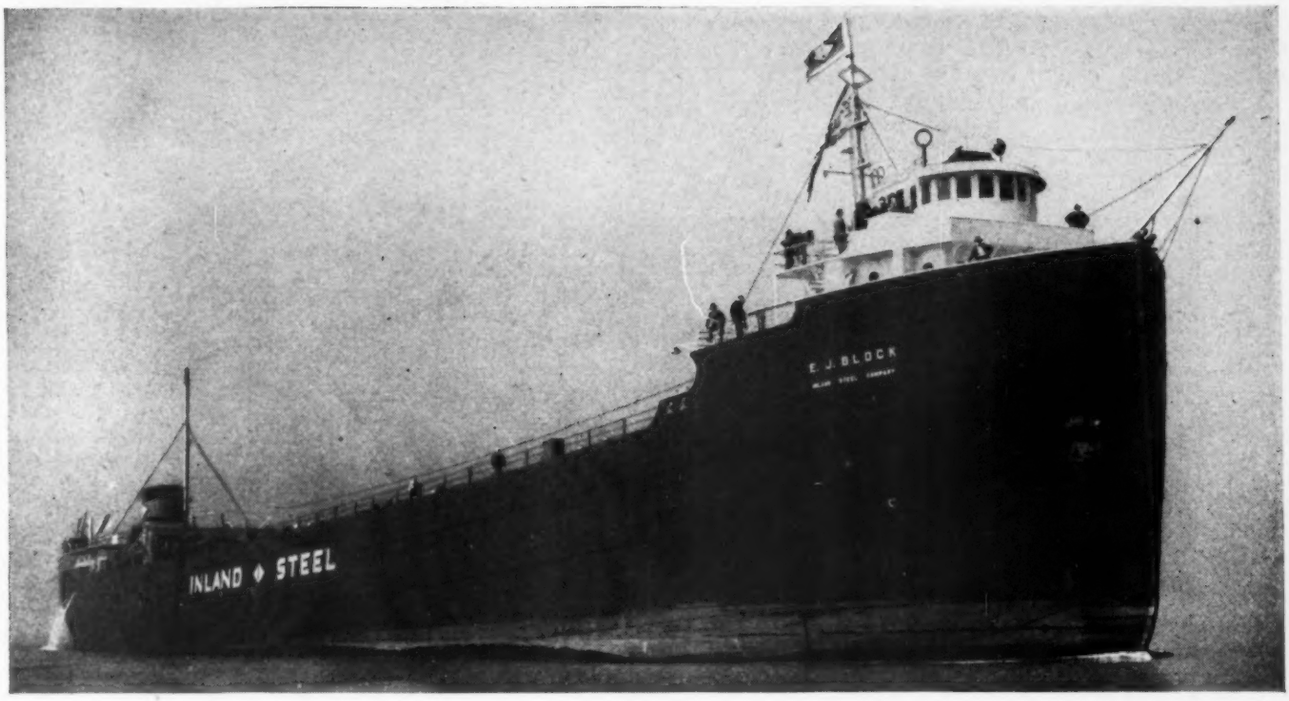
* * *

VINYL PLASTIC COATINGS FOR METAL PRODUCTS

Series of vinyl plastic coatings in solution for application in the metal products industry, including alumnum and magnesium, is being marketed by the Watson-Standard Company of Pittsburgh, Pa. They are known as Vyncote platics and form a flexible surface film that is said to retain all of the properties of solid plastics. The coatings resist water, grease, oil, chemicals, heat, etc., and are adaptable to any baking cycle whether it is one of seconds or hours.

The Vyncote prescription coatings are compounded to individual requirements, and are being used for coatings for beer and food cans, oil cans, drums and pails; interior and exterior linings for collapsible tubes; chemical resistant lining for chemical containers of all types; lining for refrigerators and stoves and also as an exterior finish for both. Vyncote is completely inert, non-toxic, tasteless and non-flammable. The coatings are available in colors or water-clear. Technical data folder furnished on request.

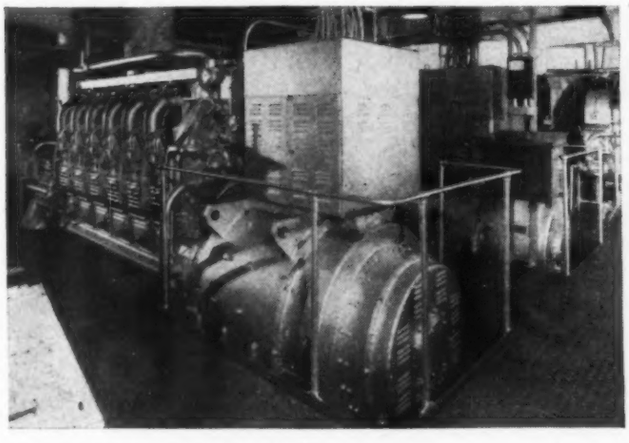
(*Turn to page* 224)



INLAND Ore Freighter First With Diesel-Electric Power

Reconverted and streamlined, with new power, new steering system, new hatch arrangement, increased capacity and a multitude of other improvements, the E. J. BLOCK, of the Inland fleet, recently made her first cargo run, with complete success.

The first lake ore-carrier to be driven by diesel-electric power, the vessel has many revolutionary features, such as hydro-electric steering, direct control of the engines from the bridge, permanent radar installation and new ballast pumps of greatly increased capacity.



Power plant of the E. J. Block consisting of two 1200 horsepower diesels driving electric generators. Either one is capable of propelling the ship.

The changes in this ship, made by American Ship Building Company, make this a most efficient carrier of raw materials for Inland Steel. With the new power system the E. J. BLOCK is one of the fastest vessels of its type. Either of its two main engines is capable of driving the ship under full load. The new steering system, direct engine-control, and radar installations make for a safer vessel. The improved pumps allow ballast to be expelled more rapidly, and in conjunction with the improved hatch arrangements, allow much faster loading of the 11,000 tons of ore, limestone or other materials.

This advancement in raw material transportation is a part of the Inland program of modernization and expansion . . . a program which will continue to supply more and better steel for American industry.

INLAND STEEL

INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois. Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Paul, St. Louis

PRINCIPAL PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • FLOOR PLATE • PILING • REINFORCING BARS • RAILS • TRACK ACCESSORIES



FAST FIGURE READING

WITH STANLEY "Flud-Lite" MAGNIFIER SPEEDS PRODUCTION

Instant, accurate readings of scales and dial indicators are easy with STANLEY "Flud-Lite" MAGNIFIERS . . . the magnifier that *carries its own light.* They also speed up inspection of machine parts, dies and similar operations as well as promote more accurate line assembly.



You get *better* work *faster* with this combination of a shadow-free fluorescent floodlight and big 5-inch, non-distorting magnifying lens.

Available in models for either portable or permanent installation. Write for illustrated folder. Stanley Electric Tools, New Britain, Connecticut.

STANLEY
Trade Mark
HARDWARE · HAND TOOLS · ELECTRIC TOOLS

1946 FIRE LOSS PUT AT $590,000,000

One thousand dollars worth of valuable property is being burned up in the United States every minute of the day at the present unprecedented rate of burning, according to the National Fire Protection Association which announces that Fire Prevention Week has been set by proclamation of the President of the United States and Governor General of Canada as the week of October 6 to 12. According to the NFPA, sponsors of Fire Prevention Week, fire losses in the United States for the 12-month period ending June 30, 1946, were $519,244,000 as against $442,877,000 for the previous 12-month period. This is an average of $43,270,333 per month, or $1,422,600 a day. In other words, fires consumed approximately $1,000 worth of property a minute — every minute of every day!

It is expected that the 1946 fire loss will reach $590,000,000 which will exceed the previous record amount of $562,000,000 in 1926.

* * *

URGE EXAMINATION OF FIRE EXTINGUISHERS

Now that standard fire extinguishers are again available, those responsible for fire protection would do well to examine old and Emergency Approved extinguishers for possible replacement, particularly if equipment has not been frequently inspected and serviced. Many an extinguisher that deserved retirement was kept in service during the war years because new extinguishers were available only to high priority holders. Where first aid fire protection had to be expanded, even priority holders often had to be satisfied with Emergency Approved Extinguishers.

The spirit in which emergency approval was adopted is indicated by the following statement from Underwriters' Laboratories, Inc., made when the development of substandard equipment became necessary:

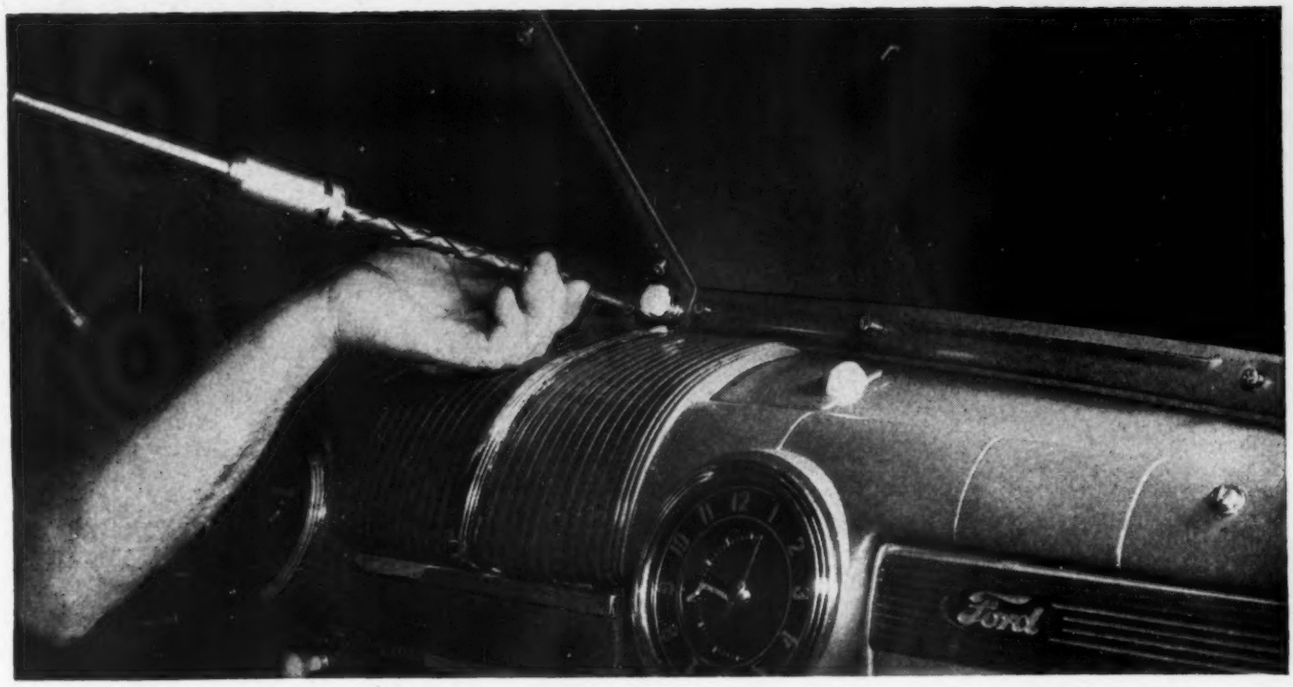
"National preparedness and defense, and now wartime controls of critical materials, have required use of various substitute materials and methods, some of which may not be acceptable after Victory, their replacement becoming a necessary part of the cost of war."

The Inspection Department of the Associated Factory Mutual Fire Insurance Companies now advises Factory Mutual Members, in its March, 1946, bulletin, as follows:

"During the war and consequent curtailment of critical materials, certain substandard fire protective equipment was manufactured as an emergency measure. Now, standard equipment is coming back on the market, and plants should call for devices with full Factory Mutual approval in making future purchases."

Standard extinguishers bear the Factory Mutual approval insignia (the letters "F.M." superimposed on a dia-

(*Continued on page* 226)





No "WOBBLE-WORRIES"



now or later . . .

Remember how ordinary slotted screws used to "ride" out of the windshield trim—and you hunted for a thin dime to drive them in again?

Have you noticed that Phillips Screws *stay put*, year after year? The answers are very simple:

First, The Phillips Recessed Head grips the driving bit *all round* instead of at two points only, thus receiving more driving power which sets the screw in deeper, more firmly.

Second, the operator is able to drive the screw *home* without pulling his punches. He's not afraid of "Wobble Worries" when using Corbin-Phillips Screws because the driving bit, seated firmly in the recessed head, can't slip out to mar the work or cause nasty accidents.

And the manufacturer is not afraid of "Wobble Worries"—*now or later*—when Corbin-Phillips Screws are used.

SP-5

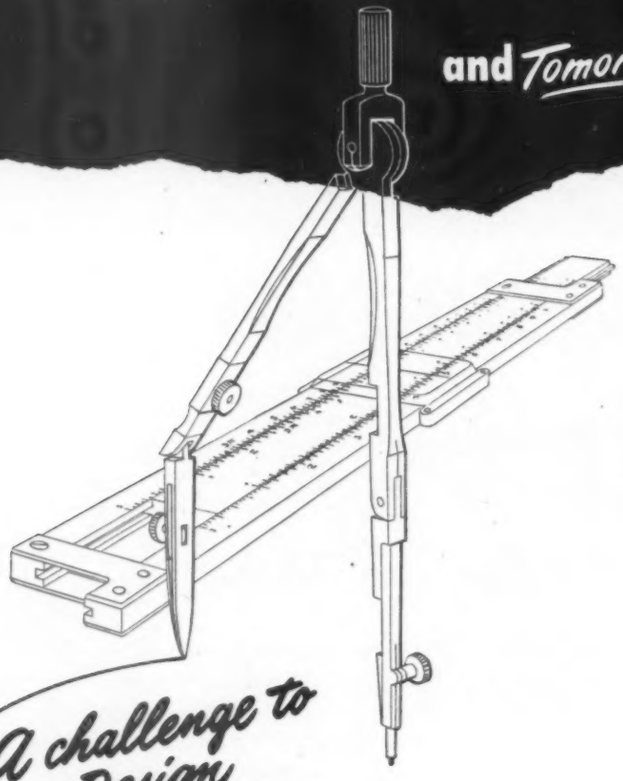
"The design of the Phillips head will be in complete harmony with the modern design of any of our products . . ."

This is one of many advantages quoted in "ASSEMBLY SAVINGS WITH PHILLIPS SCREWS"—a report prepared by an independent research organization at the plant of the Emerson Radio & Phonograph Corporation. This user has many other *proved* money-saving advantages that will appeal to you. Ask the Corbin Salesman to go over them with you.

CORBIN SCREW DIVISION
The American Hardware Corporation
NEW BRITAIN • CONNECTICUT
Warehouses:
New Britain • New York • Chicago

CORBIN PHILLIPS Screws

HUSSEY
COPPER
The Lifetime Metal . . . of Today
and Tomorrow



A challenge to Design Engineers

Copper is a metal with a future! For your new product designs, it offers many of the better characteristics acclaimed for the newer metals... plus all of the age-proved characteristics you know so well.

Hussey Copper is light . . . corrosion resistant . . . readily conforms to intricate shapes . . . solders or brazes easily . . . is the accepted conductor of electricity . . . offers a bright or satiny lustrous finish . . . ideally adapts to weight-saving, streamlined designs. More important, Hussey Copper assures a degree of uniformity in quality, gauge and physical properties which recommends its permanent specification in your most exacting designs.

Nothing serves like copper where copper's characteristics are required. No finer material can serve your applications than HUSSEY COPPER.

C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PENNSYLVANIA
Hussey Warehouses carry stocks of Copper and Brass Products for prompt shipment.

(*Continued from page* 224)

mond-shaped design) and the Underwriters' Laboratories' label, which reads "Underwriters' Laboratories Inspected" and gives the serial number of the label and information regarding the classification of the extinguisher.

The models made of substitute materials which meet the "Emergency Alternate Specifications" of the two laboratories bear the usual approval indications, the letters "EAS," and the year the equipment was manufactured. EAS approval indicates that the unit on which it appears may require more careful maintenance and may not stand up as long as the standard types.

COMPOUNDS FOR FLAMEPROOFING AND MILDEW PROOFING FABRICS

Permaproof compounds for flameproofing and mildew proofing fabrics, as well as making them water proof, developed by the Treesdale Laboratories, Inc., Pittsburgh, Pa., will be manufactured and distributed by the B. F. Goodrich Company, Akron, Ohio.

It is stated that fabrics treated with Permaproof will cease to burn as soon as direct flame from an external source is removed, gases formed by decomposition of the chemicals in the compound extinguishing the blaze and making it impossible for the treated material to withstand combustion. The fabrics will withstand weathering and numerous launderings and still maintain their mildew and flame-proof qualities, it is said, and furthermore, the compounds increase their strength about ten percent. Two types are available, the "100" series for treating tent, awning tarpaulin and other protective materials, and the "200" series, designed for interior fabrics such as drapes, rugs, curtains, and so on. Application of the compound is by dip and nip (immersion and removal of excess liquids by squeezing), followed by drying at elevated temperatures.

NEW INSTRUCTION PROGRAM ON CONTOUR SAWING

Volume I of Instruction Programs covering the technique of contour sawing has just been announced by the DoAll Company, Minneapolis, Minnesota. Primarily intended for use in educational and vocational institutions, this book will also be extremely useful to companies in the instructing of trainees.

The instructional material covers contour sawing and filing in all its aspects, applications, and operational techniques, all phases of sawing and shaping in all types of materials. The book is divided into two sections. One covering conventional, the other high speed sawing procedures, including work projects and tests to be given trainees as well a grading data.

Emphasizing that contour sawing is a vocation, the DoAll Company states

(*Continued on page* 228)



MODERN PACKAGE ENGINEERING
DOES A THOROUGH JOB

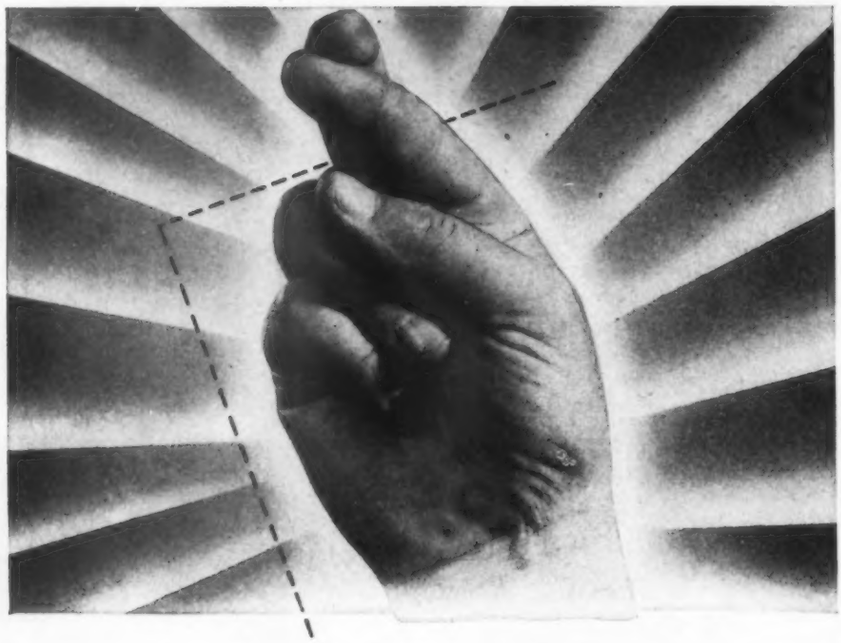
Prepare your new package design *now*. Then, as soon as raw materials again become readily available, you can *quickly* cash in on your products' full potentialities. A corrugated shipping box can be engineered in the H & D Package Laboratory to meet your particular packaging problems. Here "know-how" is based upon experience and research. Here thousands of corrugated boxes, large and small, are designed and engineered to meet every conceivable packaging situation, at the factory, in transit, in storage, at point-of-sale, in the hands of the consumer. Let the H & D Package Laboratory show you the advantages of modern corrugated package engineering. "How to Pack It" tells the complete story. The Hinde & Dauch Paper Co., Executive Offices, 4611 Decatur St., Sandusky, Ohio.

REG. U. S. PAT. OFF.

H&D HINDE & DAUCH

AUTHORITY ON PACKAGING

FACTORIES IN: Baltimore • Boston • Buffalo • Chicago • Cleveland • Detroit • Gloucester, N. J. Hoboken • Kansas City • Lenoir, N. C. • Montreal • Richmond • St. Louis • Sandusky, Ohio • Toronto



CARDOX Fire Protection Costs Less Than Cross-Fingered Optimism

• With full recognition of the place for, and value of, all fire extinguishing equipment . . . many plants have major danger spots "protected" by equipment that's simply inadequate for the job.

The distinctive Cardox method of control and engineered application of carbon dioxide . . . stored at 0° F. and relatively low pressure in a single Storage Unit *containing from ¼ to 125 tons* of fire-smothering Cardox CO_2 . . . has broadened the protection scope of carbon dioxide. Today this fast-acting, non-damaging medium provides *all* the advantages of CO_2 extinguishment for tough fire hazards, large or small, indoors or out.

There may be danger spots in your plant that call for a built-in Cardox System providing tons of fast-action carbon dioxide for protection of one or many hazards; other hazards that can best be protected by a Cardox Fire Truck that puts tons of CO_2 on swift wheels, or the 750 pound capacity Cardox Transitank now available in many parts of the country.

Write today for details on how Cardox's broadened application of carbon dioxide can best be utilized for specific operations in your plant.

CARDOX CORPORATION
BELL BUILDING • CHICAGO 1, ILLINOIS
District Offices: New York • Philadelphia • Pittsburgh • Cleveland • Detroit • St. Louis
San Francisco • Los Angeles • San Diego



FIXED FIRE EXTINGUISHING SYSTEMS | FIRE TRUCK—Tons of CO_2 on Wheels | AIRPORT FIRE TRUCK | TRANSITANK—Capacity—750 pounds

CARDOX

CO_2 FIRE EXTINGUISHING SYSTEMS

(*Continued from page 226*)

that use of this instruction program wil make better, more valuable operators. It will enable them to recognize sawing applications that might otherwise not be thought of as such. The end result being considerable savings in time, material and manpower.

Four years in preparation, this material is substantially the same as used with such success by the army and the air corps in its training of DoAll operators.

Volume I of this instructional program is available to companies for use in their training programs as well as to vocational schools and educational institutions. Full particulars can be obtained from The DoAll Company, 1301 Washington Avenue, South, Minneapolis 4, Minnesota.

$75,000 WORTH OF GOLD SALVAGED ANNUALLY

At regular intervals girls in Eversharp's Chicago plant strike gold. Illustration shows one of the employees salvaging scraps of the precious metal which fall from the machines which produce barrels, tips, caps and clips for pens and pencils. A special type flooring is used, and metal that becomes imbedded in the tar-paper covering is also reclaimed. In this department and others $75,000 worth of gold is salvaged annually.



Sweeping-up gold in Eversharp plant

CONVERT SPECIFICATIONS FOR INDUSTRIAL BENEFIT

Commodity committees of the SAE are converting wartime SAE Aeronautical Materials Specifications for widespread utilization by industry.

Under direction of coordinating group representing airplanes, powerplants, accessories, and airline operation, SAE Heat-Resistant High-Density Alloys Committee is compiling data on heat-resistant alloys preliminary to preparing materials specifications for jet and turbine powerplants. Other committees are working on materials specifications for plating and protective coats, synthetic rubber, plastics, aluminum and magnesium castings, and for aluminum, magnesium, nonferrous, carbon steel, corrosion-resistant steel, and low-alloy steel products.

(*Turn to page 230*)

Forgings Offer 5 MAJOR ADVANTAGES *Over Castings*



Dependable Performance—Forgings provide ultimate strength and toughness, with maximum resistance to tensional, torsional and compression stress, and high resistance to impact and shock loads.

Longer Service Life—Forgings embody the highest obtainable fatigue resistance—the determining factor in the ultimate life of machine and equipment parts which are subject to repeated stress in continuous service.

Freedom from Breakdowns—The greater strength of forgings makes their liberal use the soundest possible insurance against breakdowns, down time for repairs and high maintenance costs.

Production Advantages—Forgings generally require less time to machine and finish, as the close tolerances obtainable leave a minimum of metal to be removed, resulting in lower machining and tooling costs. Weight is saved through the greater strength of forgings, which permits the use of thinner metal sections.

Available Now—Most types of forgings are quickly available without delays waiting for patterns, pouring or cleaning facility. DON'T WAIT FOR CASTINGS—LET US HELP YOU CONVERT YOUR JOBS TO LOW COST FORGINGS.

KROPP FORGE COMPANY
5301 W. Roosevelt Road • Chicago 50, Illinois

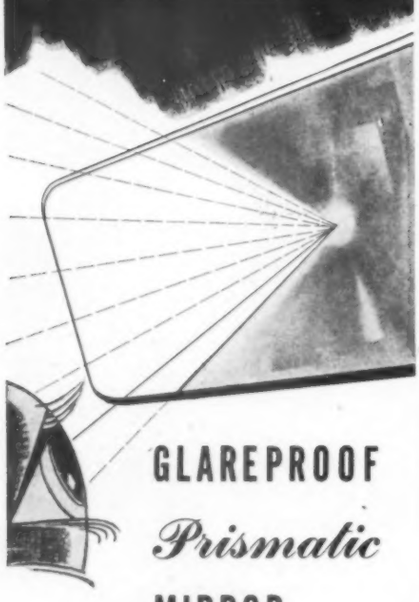
Refer to Your Local Phone Directory for Kropp Forge Engineering Service in
Atlanta, Birmingham, Buffalo, Cedar Rapids, Chicago, Cleveland, Dallas, Detroit, Houston, Indianapolis, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, New York, Portland, Rockford, St. Louis, St. Paul, San Francisco, Seattle, South Bend, Tulsa. Canada: Montreal, Toronto, Vancouver, Winnipeg. European Representatives: New York; Paris, France; Stockholm, Sweden.

SERVING INDUSTRY SINCE 18 31 OVER 100 YEARS — KROPP FORGE CO.

KROPP

"FORGINGS TO EVERY SPECIFICATION"

Another Use for Donnelly-Kelley Precision Glass Parts



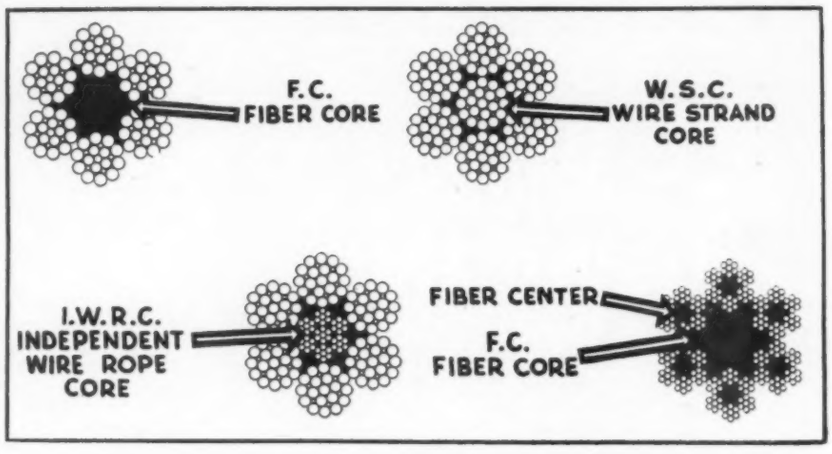
GLAREPROOF *Prismatic* MIRROR

● This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.

DONNELLY-KELLEY *Glass Products*

Donnelly-Kelley Glass Co.
Holland, Mich.

Adopt Uniform Terms For Wire Rope Centers



There is a trend on the part of the wire rope industry and the Federal Bureau of Standards to unify and adopt common terminology. Federal Specifications have adopted these terms and have taken a leading part in using these terms and changes. In cooperation with this effort Macwhyte Company is adopting these terms which will appear in revised reprint of G-15 Catalog and new price lists being printed.

In the above illustration, four ropes are shown with the new terms applied.

Following are the terms and changes explained:

CENTER: This term formerly used indiscriminately to refer to the core of both wire rope and individual strands, now only refers to the *center of strands.*

CORE: This term formerly used loosely, to apply to the heart, center, or core of a wire rope or strand, now only applies to the core of a *wire rope.*

HEMP: This term loosely used for Hemp, Java, Manila or other fiber cores is now dropped in favor of the word *"Fiber."*

FIBER: This term is adopted to refer to any fiber cores or fiber centers that may be of Hemp, Java, Sisal, Manila, Jute, Cotton, or other non-metallic material.

For Example:

"Hemp Fiber" in a *Wire Rope* now becomes "Fiber Core," with the abbreviation "F.C."

"Hemp Center" in a *Strand* now becomes "Fiber Center."

"Independent Wire Rope Center" now becomes "Independent Wire Rope Core," with the abbreviation "I.W.R.C." retained.

"Wire Strand Center" now becomes "Wire Strand Core," with the abbreviation "W.S.C." being retained. *Macwhyte Ropeology.*

Machine Tools Offered on Fixed Price Basis

New Prices Cover 60-70 Percent of All Surplus Government-Owned Machine Tools—Tools consist mainly of General Purpose High Production Machine Tools

In an accelerated national sales campaign, approximately 350 million dollars worth (acquisition cost) of surplus government-owned machine tools will be offered for sale on a fixed price basis, Robert M. Littlejohn, Administrator of the War Assets Administration, said in announcing WAA's new pricing program. This action will be taken in an amendment to Regulation 13.

Heretofore the so-called Clayton formula method of pricing has ruled the pricing of all standard general purpose machine tools. "However," Mr. Littlejohn said, "such pricing has proved a deterrent to sales of many such tools and in a campaign to speed up sales it has been decided to remove all such machine tools that have proven slow sellers from the Clayton formula and to price fix them on a dollar basis by make, model, and size. Then, too, the cost of handling and storage of the machine tools at present is consuming nearly 20% of WAA's entire annual budget."

Mr. Littlejohn emphasized that the new pricing arrangement will accomplish the following objectives: (1) encourage all types of manufacturers to replace their worn out or obsolete machinery with government-owned, up-to-date and latest design machine tools; (2) assist small business, particularly veterans, in the purchase of tools essential to civilian production; (3) it will provide equipment for re-builders and machine tool manufacturers for rebuilding for domes-

(*Continued on page* 232)

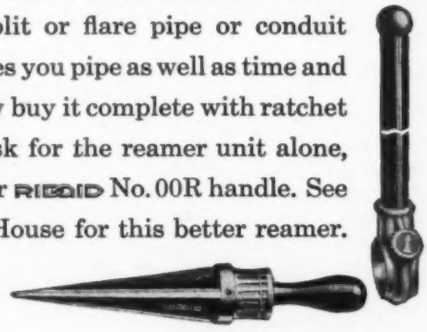
This extra-long taper makes your pipe reaming quick, easy and safe



RIDGID

LonGriP Pipe Reamer

● The trick of its efficient performance is in that extra long taper—it reams burr cleanly from any pipe in a few easy ratcheted strokes—practically no pressure required. Even more important than that, it won't thin, split or flare pipe or conduit wall. That saves you pipe as well as time and work. You may buy it complete with ratchet handle—or ask for the reamer unit alone, which fits your RIDGID No. 00R handle. See your Supply House for this better reamer.



Reamer unit fits RIDGID No. 00R handle.

You thread small pipe with least effort with this tough little RIDGID No. 0R



● Speedy and a worksaver, when you want to cut perfect threads on ⅛" to 1" pipe. This smart steel-and-malleable internal ratchet threader has precision-made heat-treated tool-steel dies, each factory tested . . . for smooth fast threading. Die heads snap in from either side, can't fall out. No special dies needed for close-to-wall work. No. 0R, ⅛" to 1"; No. 11R, ⅛" to 1¼." You'll like these durable efficient RIDGIDs for small pipe. Ask your Supply House.



Chasers easily reverse for close-to-wall threads.

Millions of RIDGID Tools in use

RIDGID

WORK-SAVER PIPE TOOLS

The Ridge Tool Company
Elyria, Ohio, U. S. A.

Look to LUNKENHEIMER for STEEL VALVES

...This Mark is Your Assurance of Highest Quality!



2500-lb. S. P. Alloy Steel Gate Valve, with all-welded By-pass, welded in Seat Rings, Seal Welded Bonnet with Breech Lock, Welding Ends, Bevel Gear Drive.

● Long skilled in the manufacture of valves and ever responsive to industry's needs, Lunkenheimer pioneered in the development of Steel Valves.

With the application of higher and higher temperatures and pressures, operating conditions became increasingly severe. Lunkenheimer was ready with valves fabricated from materials that met the most exacting requirements.

And as new problems arise, Lunkenheimer metallurgical research, engineering knowledge and specialized manufacturing facilities can be depended upon to aid in their satisfactory solution.

AT THE POWER SHOW — BOOTH 52

See the latest Lunkenheimer design of 1500-lb. S. P. Steel Breech Lock Gate Valves with Seal Welded Bonnet

In Attendance: FRANK P. RHAME, President; HARRY A. BURDORF, Vice-President in Charge of Sales; WM. CARSON, Sales Engineer; FRED H. HEHEMANN, Chief Engineer; JOHN W. BOLTON, Chief Metallurgist; ALLEN W. LANDER, Eastern Sales Manager; WM. J. ANGERT, Manager, New York Branch.

SEE YOUR LUNKENHEIMER DISTRIBUTOR FOR BETTER VALVE SERVICE

Lunkenheimer manufactures a complete line of Bronze, Iron, and Steel Valves, Boiler Mountings, Lubricating Devices and Air Devices. Available from Distributors located in all industrial centers. There is one near you, fully equipped to assist with your (MRO) maintenance, repair and operating problems.

THE LUNKENHEIMER CO., Cincinnati 14, Ohio
NEW YORK 13, CHICAGO 6, BOSTON 10, PHILADELPHIA 7
EXPORT DEPARTMENT: 318-322 HUDSON ST., NEW YORK 13, N. Y.

(*Continued from page 230*)

tic and export sales.

"It is believed," he said, "that this fixed price basis will also encourage the foreign trade to make purchases for their own production requirements."

The Administrator went on to say that these new prices cover 60-70 percent of all surplus government-owned machine tools.

Consisting mainly of general purpose, high production machine tools, some specialized, non-standard tools are included, thus making it possible for many shops to acquire specialized equipment, with some alteration which can be used for general purpose. This large inventory will be disposed of through WAA's 33 regional offices as well as through approved WAA dealers.

Prospective purchasers may visit WAA warehouses or plants where machinery is located, to effect immediate purchase and delivery.

The same price for like tools will prevail in all 33 regional offices.

WAA has approved nearly 3,000 firms and individual machine tool dealers, who are engaged in selling these highly specialized and technical machines. The "approved dealers" receive 12½% commission on the selling price of goods they sell. This commission is paid by the government and not by the purchaser of the equipment. The purchaser pays the same fixed price for an article bought through an approved dealer that he would pay if he bought the article from WAA.

The Clayton formula will continue to apply to the balance of the tools, which price experience has proven to be attractive to buyers.

* * *

CANADIAN RAILWAYS PURCHASING DEPT. COMMENDED BY GOVERNMENT

A letter of appreciation for the aid extended to the Dominion Government by the Purchasing Department of the Railway in the handling of requirements for the armed forces during the war has been received by R. C. Vaughan, C. M. G., chairman and president of the Canadian National Railways, Montreal, Que., from the Rt. Hon. C. D. Howe, Minister of Reconstruction and Supply.

"Your company was good enough to agree to operate offices on our behalf at Halifax, Moncton, Montreal, Winnipeg and Edmonton," Mr. Howe's letter states, "and these five offices placed orders covering stores and services to a total value of $146,000,000, representing not only a tremendous volume of work, but also a great responsibility. I cannot speak too highly of the efficient manner in which the work was performed on our behalf."

After expressing thanks to the Railway management for the services of the employees who operated these offices, the Minister's letter adds, "I shall appreciate it very much if you will be good enough to extend to all officers concerned my personal appreciation of the wholehearted cooperation that they extended to the Government in a critical period."

TALIDE METAL MEETS EVERY REQUIREMENT

Talide
(TUNGSTEN CARBIDE)
Performance!

A FEW MAJOR USES FOR TALIDE METAL


Lathe and Grinder Centers


Centerless Blades


Rolling Mill Work Rolls


Diamond Wheel Dressers


Cutting Tools


Sheet Metal Dies


Drill Jig Bushings

the hardest metal made!


Plug and Ring Gages


Wire and Tube Drawing Dies

Hardest man-made metal.
Highest modulus of elasticity. (double that of steel)
Extreme Density.
Low coefficient of expansion and contraction.
High compressive strength.
High red hardness.

On any cutting, drawing, or wear resistance application, you can increase production many times and cut costs as much as half. Cutting tools of Talide cut 2 to 3 times faster than high speed tool steel. Talide drawing dies and wear resistance parts usually outwear steel by at least 50 to 1.

Send us parts or prints and we will show you how this hardest man-made metal can improve your production. If you prefer, a Talide sales engineer will call at your office.

THE ENGINEERED CARBIDE FOR ALL APPLICATIONS

MC TALIDE

METAL CARBIDES CORPORATION

YOUNGSTOWN 5, OHIO *Pioneers in Tungsten Carbide Metallurgy*

SINTERED CARBIDES FOR CUTTING • HOT PRESSED CARBIDES FOR DRAWING AND WEAR RESISTANCE



FOR SAFE, UNOBSTRUCTED VISION WITH LIGHTWEIGHT COMFORT

A-O Panoram *Plastic* SAFETY GOGGLES

The result of long research and experimentation, the new No. 600 A-O Panoram Plastic Safety Goggles provide safety, clear wide-angle vision, lightweight comfort and attractive appearance. They have *easily replaceable* plastic lenses; frames that conform closely to forehead and facial contours; eyecups that provide maximum protection, yet give sufficient ventilation to reduce fogging; bridge which fits any size nose comfortably—without pressure or facial resistance. Goggles may be worn directly over eyes or over personal glasses. Frames and lenses are available in either clear or green acetate. Especially recommended for jobs such as chipping, grinding, babbitting, riveting, hand tool and machine operations, rail and rivet cutting and spike driving.

Send to your nearest A-O Safety Representative for bulletin which describes the many unusual features of this new A-O development.

American Optical COMPANY
Safety Division

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL CITIES



Brown & Sharpe Spiral End Mills cut *FASTER*, more *FREELY* and require *LESS POWER*

Hollow face and angle of rake



Produced by a generating process which reduces the danger of grinding burns, these edges cut more pieces per sharpening. The angle of rake reduces power consumption.

Correct number of teeth



Tooth design permits use of fewer teeth which increases cutting efficiency and enables teeth to be made much stronger with greater chip space.

Stronger teeth



The use of a double angle land, giving the desired cutting clearance without danger of the heel of the land rubbing on the work, makes these stronger teeth practical.

Correct helix angle



Two types of helix angle provide smooth cutting action . . . a small helix angle for teeth of two **lipped spiral end mills for accurate** milling of slots and a steep helix angle for teeth of both regular and two lipped end mills for smooth, fast-cutting action on general milling work.

Fine design features and skilled manufacture give these end mills the qualities essential for fast production. The clean-cut chips with little discoloration – not compressed – not misshapen–are visible evidence of clean cutting action – ability to take many cuts between sharpenings with a long cutter life. Brown & Sharpe End Mills will produce more work for you at lower cost. Write for literature. BROWN & SHARPE MFG. CO., Providence 1, R. I., U.S.A.

B·S

We urge buying through the Distributor

BROWN & SHARPE CUTTERS



WAA FORMS HOSPITAL ADVISORY COMMITTEE

Agreement to form a Hospital Advisory Committee to review set-aside listings and other surplus property problems was announced by War Assets Administration after a meeting with representatives of the American Hospital Association.

WAA officials agreed to report on plentiful items which meet hospital requirements prepared by the Office of Surplus Property Utilization, U. S. Public Health Service, to give hospitals some indication of what might be available at the fifth priority level.

To speed the movement of surplus to hospitals, WAA officials also concurred in a request that instructions be issued to regional and branch offices to keep eligible hospitals informed about available property. It was pointed out that newspaper advertising, particularly for sales at site, would be used increasingly and serve as an additional medium of information.

AHA committee representatives also recommended that, where surplus items are concentrated in one area, allocations be made to surrounding regions. They requested a longer period of notice before sales. The recommendations were taken under advisement.

J. S. Wadsworth, Director, Public Interest Division, presided over the meeting. Present also were Arthur Eaton, Deputy Director, Claimant Agencies Branch, WAA; Harold C. Mickey, Sup't., Duke Hospital, Durham, N.C.; Hazen Dick, American Hospital Association, Chicago; Guy J. Clark, Cleveland Hospital Council, Cleveland, Ohio; Albert V. Whitehall, Staff Attorney, AHA; Ragnar T. Westman, U.S. Public Health Service; and Paul L. Burroughs, Purchasing Agent, Pennsylvania Hospital, Philadelphia, Pa.

* * *

OFFICE OF TECHNICAL SERVICES OFFERS BROAD SERVICE

More than 200 businessmen, manufacturers, and others call upon the Reference Service of the Office of Technical Services, Department of Commerce, each day for help in tracking down technical data contained in the 40,000 reports on sale by the office, according to John C. Green, OTS Director.

OTS is the clearing house for all scientific and technical reports, from both American and foreign sources, which are available within the Federal Government. Reports are obtained from other Federal agencies, from investigators sent overseas by OTS to study production processes, materials, and equipment in Germany and former German-occupied countries, and through exchange with England and other foreign countries.

To facilitate public use of these documents, OTS has established a Reference Service staff of six librarians, under the direction of Dorothy Gordon, in Room 1325 of the Commerce Building, 14th

(*Continued on page* 238)



Get this NEW FREE BOOK of better ideas for packaging your product!

Whatever your product—if you have a product-packaging problem—you'll find ideas you can use in this new, free book about KIMPAK* Float Packaging.

Blocking and Bracing...Flotation Packaging...Absorbent Packaging...Surface Protection—these Four Basic Methods of interior packaging are covered for you in detail. Photographs—46 of them—illustrate exactly how these methods are used by some of America's largest industries. And a convincing display of 11 outstanding KIMPAK advantages will show you how KIMPAK—clean, soft, resilient—can do a better low-cost job of protecting *your* product in shipment.

Get this fascinating new book of *packaging ideas you can use.* Mail the coupon for your free copy—today!

We are producing all the KIMPAK we possibly can, but due to the great demand, your distributor may have some difficulty in supplying you immediately.

Kimpak
A PRODUCT OF Kimberly Clark RESEARCH
CREPED WADDING

*KIMPAK (trade-mark) means Kimberly-Clark Creped Wadding.

KIMBERLY-CLARK CORPORATION P-1146
Creped Wadding Division, Neenah, Wisconsin
Please rush my FREE COPY of the new idea book, "KIMPAK FLOAT PACKAGING".

Firm _____

Address _____

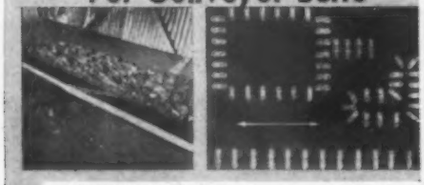
City _____ *Zone* ____ *State* _____

Attention of _____

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips and patches that can be made with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts



ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts



ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅝" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

(*Continued from page 236*)

Street near Constitution Avenue, Washington, D. C. Ample library facilities are provided in this reference room, which is open to the public Monday through Friday, from 8:30 A.M. to 5:00 P.M.

Inquiries may be made by calling at this reference room; by telephoning District 2200, Extension 1630; or by writing to the Reference Service Section, Office of Technical Services, Department of Commerce, Washington, 25, D. C.

The mainstay of the Reference Service is a central card catalogue. The catalogue contains index cards for the author of each report available from OTS, as well as cards for the subjects covered, the plants discussed, and other information contained in the reports.

In addition to furnishing a key to processes, formulas, trade names, and similar data, the cards indicate the page numbers of the weekly *Bibliography of Scientific and Industrial Reports* on which abstracts of the reports may be found. They also indicate the depository library —Library of Congress, Department of Agriculture Library, or Army Medical Library—in which the individual reports are housed.

A separate card file lists each report under the agency which issued it. This means that researchers can identify immediately all reports released by the Office of Scientific Research and Development, Army, Navy, Joint Intelligence Objectives Agency, and other agencies.

SIMPLIFY PROCUREMENT OF PURCHASES BY NON-PROFIT BUYERS

In a move to centralize and simplify procedures for the purchase of surplus property by non-profit buyers, the War Assets Administration has assumed the functions formerly carried out by the Federal Security Agency under SPA Regulation 14.

The U. S. Office of Education, FSA, will continue its activities in the real estate field and in the Army-Navy donation programs. In matters pertaining to the disposal of surplus personal property, it will function only in an advisory capacity when requested by WAA.

Under the new plan, Group Benefits Branch of the Public Interest Division, WAA, will determine the eligibility of health, educational and public welfare institutions entitled to the benefits of WAA regulations; will issue discount and "fair value" certificates; will allocate surplus property handled through national programs and will recommend policy promoting the benefits granted to non-profit institutions.

All "discount certificates," symbol numbers and fair value certificates previously approved by the Federal Security agency will continue to be honored by the WAA regional offices.

No change has been made in procedures for educational institutions, which will continue to operate through the State Educational Agencies for Surplus Property.

Health and welfare institutions which do not already possess the proper certificates should apply for certificates to the Group Benefits Branch, Public Interest Division, War Assets Administration, Washington 25, D. C.

Once in possession of a certificate, health and welfare institutions should send in their orders, stamped with the certificate number, directly to the WAA regional office in their area.

WILL USE COMPETITIVE BID SYSTEM FOR DISPOSING OF WAR SUPPLIES

The War Assets Administration has set the stage for more rapid disposal of war surplus property by removing bottlenecks and paper work which have prevented its regional directors from making the most efficient use of the competitive bid system in selling. Under the streamlined instructions, regional directors may now call for competitive bids after fixed price offerings have proved unsuccessful or inappropriate. The priority and preference requirements of disposal and the fixed price method of sale will remain the basic method to be followed whenever the fair market value of the surplus can be determined in advance. Under the new policy, property not disposed of after being offered at fair prices and to proper trade levels and in the buying areas where the merchandise is normally purchased, is to be promptly reoffered under competitive bidding. This does not include machine tools and production equipment.

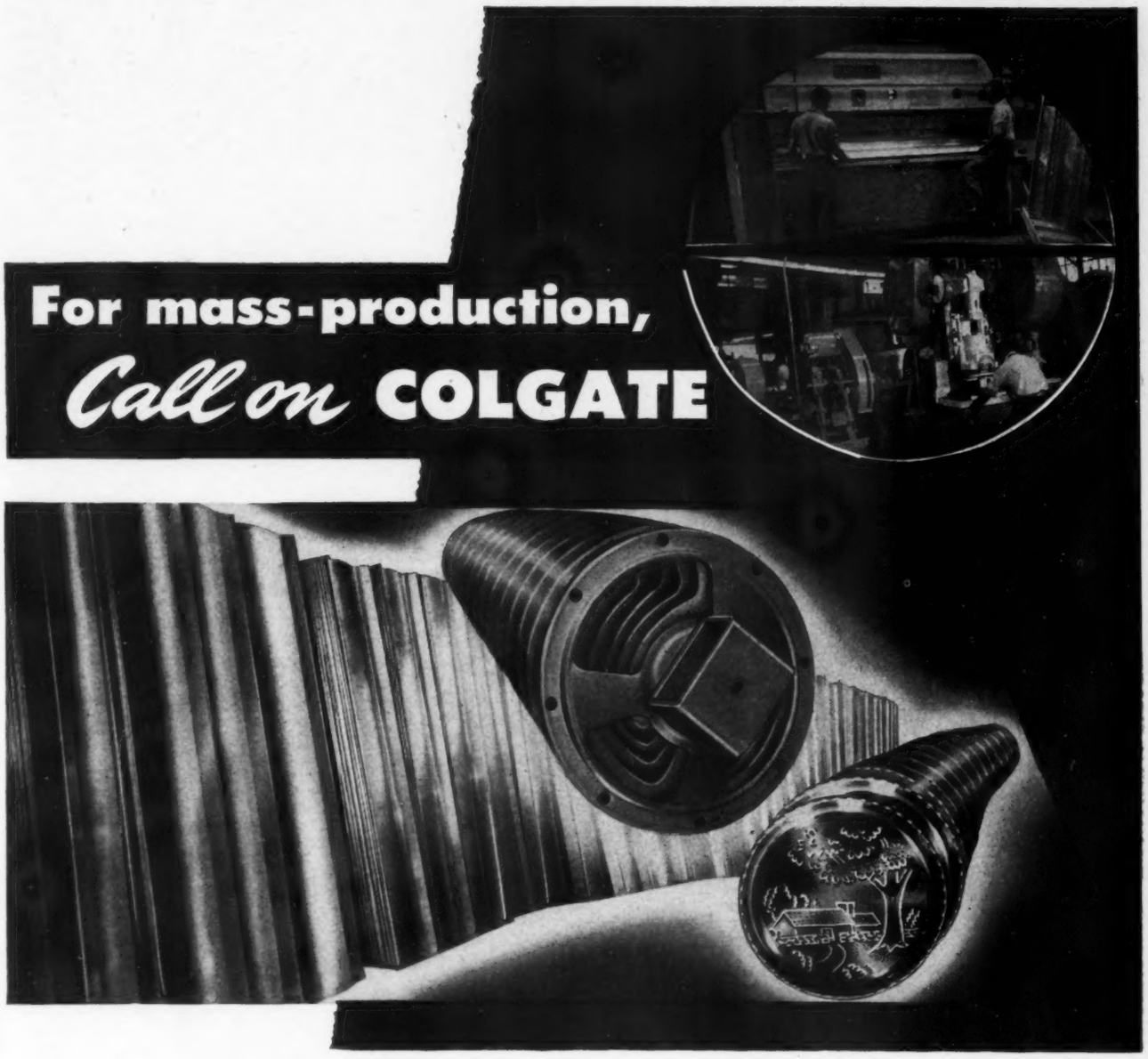
PROCEDURE FOR BUYING MATERIALS HELD BY RFC

The procedures by which eligible persons may buy certain materials held by the Reconstruction Finance Corporation were issued recently by the Civilian Production Administration.

A new Priorities Regulation, Number 34, lists thirty-three metals, minerals and other materials held by RFC. Table A to Priorities Regulation 34 explains in detail who is eligible to buy these materials from RFC, whether or not specific CPA authorization is necessary for the purchase and the CPA division or branch which is responsible for each material. The table also gives the form of certification required of each buyer in those cases where specific CPA authorizition is not required.

Many of these materials are designated "strategic and critical" under the Federal Stockpile Act of 1946, which requires that quantities in excess of what CPA determines are necessary for current industrial requirements must be turned over to the premanent Government stockpile.

This regulation makes no substantial change in policy and procedure governing these materials. The policies and procedures with respect to these materials are being incorporated in a published regulation in accordance with the requirements of the Administrative Procedure Act.



Coasters, formed panels, canape trays, speakers . . . whatever the size of your part or assembly—when you want volume, you can count on Colgate. We have the facilities (mechanical presses up to 200 tons), the space (two large plants), the skilled manpower, and "know-how" for large production runs.

Colgate "Engineered Service" helps iron out your manufacturing problems, and our volume technique saves production time and trouble.

Have you a production job that calls for large volume? Call in Colgate. The assembly or part will be made right and turned out fast.

STAMPING • FORMING • DRAWING • WELDING • FINISHING • ASSEMBLING

COLGATE *Manufacturing Corporation*

AMITYVILLE, LONG ISLAND, NEW YORK

LIGHT METALS PRODUCTS

Among the ASSOCIATIONS

Southeastern Purchasing Agents Hold Third Annual Conference at Birmingham

Purchasing Agents of the Southeast, District No. 7 of the National Association, which embraces the Alabama, Chattanooga, Florida, Georgia, Louisville, Memphis and New Orleans associations, held their Third Annual Conference, or Postwar Conference, at the Thomas Jefferson Hotel, Birmingham, Ala., October 10 and 11, with the Alabama association as host.

Inasmuch as the 10th of the month is the absolute deadline date for editorial matter published in Purchasing, it is impossible in this issue to other than review the unusually effective program that was presented. A complete report will be published in the December issue.

George H. Cole, purchasing agent, Alabama Power Company, Birmingham, general chairman of the conference, called the conference to order Thursday morning, October 10th, with Jerry L. Watson, president of the Purchasing Agents Association of Florida, presiding.

Following invocation, and a welcome to Birmingham greeting by President W Cooper Green of the City Commission, the first speaker on the program was Lewis M. Smith, vice president and director of public relations of the Alabama Power Company, Birmingham, whose subject was "The Purchasing Agent and Public Relations." The ensuing discussion was led by Edgar E. McCulley, purchasing agent of the Courier-Journal Job Printing Company, Louisville, Ky.

Economics of Purchasing

Dr. Howard T. Lewis, professor of Marketing, Harvard Graduate School of Business Administration, and editor of the Harvard Business Review, was the next speaker, his subject being "Economics of Purchasing." Discussion wa led by Martin Sunderland, purchasing agent, Memphis Union Station, Memphis, Tenn.

With W. E. Rier, national director, Memphis association, presiding, the Thursday afternoon session dealing with current purchasing problems, was opened with an address by George A. Renard, executive secretary of the N. A. P. A., under the theme "From One P. A. to Another."

The next speaker was President George W. Aljian, president of the National Association, and director of purchases and packaging for the California and Hawaiian Sugar Refining Corporation, San Francisco, whose subject was "How Big is our Job?".

The next feature was an Information Panel with Fred A. Lind, purchasing agent, Louisiana Coca-Cola Bottling Company, New Orleans, as master of ceremonies, during the course of which questions submitted by members were answered by the following panel members: James M. Alexander, purchasing agent, The Cavalier Corporation, Chattanooga; J. R. Carmichael, supervisor of purchases and stores, Georgia Power Company, Atlanta; H. W. Gutman, purchasing agent, Standard Oil Company of Kentucky, Louisville; L. C. Teague, purchasing Agent, Tennessee Coal, Iron & Railroad Company, Birmingham; and, Executive Secretary George A. Renard of the National Association.

The Thursday business sessions were followed by pre-banquet refreshments, and banquet session presided over by George L. Wilson, chairman of the program committee, purchasing agent, Jefferson County Commission, Birmingham Feature speaker for the evening was Clayton Rand, editor and author, Gulfport, Miss., who spoke on "The Over-Education of the Unintelligent."

October 11 Activities

Friday, October 11th, the morning session, W. S. Flinn, purchasing agent, the Simplicity System Co., Chattanooga, presiding, was opened with an address by Thomas D. Jolly, vice president of the Aluminum Company of America, Pittsburgh, and past president of the National Association, on the subject "Buyer-Seller Relationship." Discussion was led by R. N. Patrick, purchasing agent, Plantation Pipe Line Company, Atlanta.

Stuart F. Heinritz, editor, Purchasing Magazine, was the next speaker, his subject being "The Future of Purchasing." Discussion was led by Dana Price of the Freeport Sulphur Co., New Orleans.

"The Affairs of District Seven" was the subject of talk by A. Grant Clark, vice president, District Seven, N.A.P.A., purchasing agent, McWilliams Dredging Company, New Orleans. Next, Harlan E. Cross, chairman District Activities Committee, purchasing agent, Sloss-Sheffield Steel & Iron Co., Birmingham spoke on "District Activities," followed by general discussion; report of resolutions committee, T. A. Corcoran, Courier-Journal and Louisville Times, Louisville, chairman; announcements; and adjournment. Friday afternoon was given over to committee and group meetings.

The Third Conference was the first held by the district since 1941, meetings having been discontinued from 1942 to 1945, inclusive, because of war conditions.

* * *

H. A. HARTLAND HEADS NEW YORK STEAMSHIP GROUP

Henry A. Hartland, purchasing agent of Agwilines, Inc., The New York Porto Rico S. S. Company and Cuban Mail S. S. Company, has been elected chairman of the American Steamship Purchasing Agents Group of the Purchasing



H. A. Hartland

Agents Association of New York, succeeding Charles J. Ogg, Marine Transport Lines, who continues as a member of the board.

Jacob DeBoer of Barber Steamship Lines was named vice chairman, and J. H. Leonard was appointed secretary. Other executive members elected are: James A. Smith, Luckenbach Steamship Company; Frank C. Gannon, Tankers Company and James Pricolo, National Bulk Carriers Inc.

The Steamship Group comprises sixty companies which own or operate the greater bulk of the tonnage of American merchant shipping.

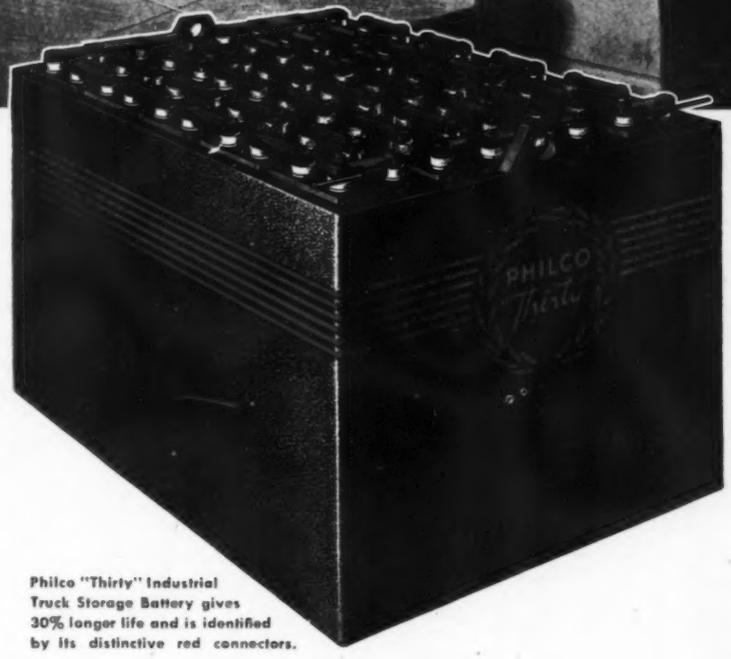
* * *

OPA CAUSES CANTON ASSOCIATION ANOTHER HEADACHE

The Purchasing Agents Association of Canton, Ohio, after meeting for many years at the Elk's Club in that city, has found it necessary to find another meeting place, for the reason that the food situation has become so acute that the club has found it necessary to eliminate servicing all outside organizations.

(*Continued on page 242*)





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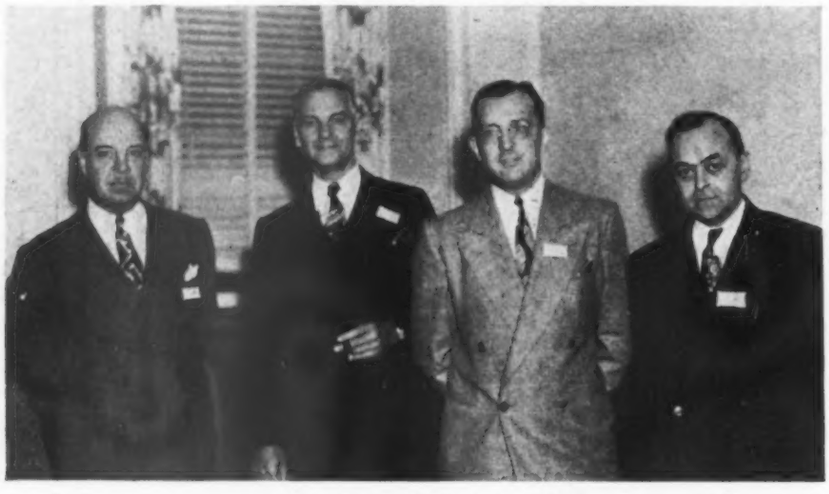
Trenton Purchasing Agents Club Marks Third Anniversary

The Carteret Club of Trenton, N. J., was the scene of an interesting meeting October 3rd, marking the third anniversary of the Purchasing Agents Club of Trenton. The meeting was in the form of a testimonial dinner to the two past presidents of the group, at which officers for the 1946-47 season were installed.

The officers honored were Thomas H. Gill, first president of the group, purchasing agent of the Sloane-Blabon Corporation, and John E. Bilbee, Stokes Molded Products Company, president for the 1945-46 term.

The Trenton Club is Mr. Gill's "baby". He had long stewed over the fact that Trenton, one of the country's important industrial centers, whose motto is "Trenton Makes, The World Takes," did not have an industrial purchasing agents association. Several of the purchasing agents of the hundred or more industrials in the Trenton area are members of the Philadelphia Association some thirty miles away.

About three and a half years ago, feeling that the time was long past due when Trenton purchasing agents should be enjoying the fraternal and business benefits of a well-knit organization, Mr. Gill had a luncheon meeting with a small group of the local P.A.s, at which the matter of a local association was thoroughly discussed. As a result of this meeting, invitations were sent to a large number of purchasing agents suggesting that they join in stated luncheon meetings as a fraternal gesture.



OFFICERS OF TRENTON CLUB

Thomas H. Gill, secretary; John A. Hobson, president; (both Sloane-Blabon Corp.); K. R. Loux, vice president, Philco Corp., Battery Div.; and F. R. Weiant, treasurer, Whitehead Brothers Rubber Company.



DIRECTORS

A. T. Holloway

M. F. Jones

J. E. Bilbee

Some twenty purchasing agents attended the first luncheon meeting which was held in November 1943. It was soon found that the noon hour did not afford enough time for fraternizing and discussion of business matters and the luncheon meetings were supplanted by dinner meetings. Within a few months the roster listed 47 members, and on July 1, 1944, these became the charter members of the Purchasing Agents Club of Trenton.

Formal constitution and bylaws were adopted. Among other things the constitution provides that "The object and

(*Continued on page 246*)

(*Continued from page 240*)

The association's regular monthly meeting on September 19th was held at Yants Restaurant in Canton, and was largely devoted to a general discussion of the business affairs of the association. It was announced that A. C. Walsh, Purchasing agent for the Timken Roller Bearing Company for many years, and a director of the association, had retired as of September 1st. One new member was welcomed into the association, namely William Hague, Shenango-Penn Mold Company, Dover, Ohio.

CINCINNATI HOST TO SIXTH DISTRICT COUNCIL

The Purchasing Agents Association of Cincinnati was host to the Sixth District Council meeting presided over by Ralph O. Keefer, vice president of that district, at the Netherland Plaza hotel, September 20-21. National Directors in attendance included F. G. Allen, Elliot Electric Co., Cleveland; A. W. Anderson, Kerotest Manufacturing Co., Pittsburgh; W. L. Betz, Buckeye Steel Castings Co., Columbus; M. J. Birzer, Jr., Superior Switchboard & Devices Co., Canton; E. S. Ferry, the Ferry Machine Co., Kent, Ohio; V. H. Kellemeyer, Kellemeyer Chemical Co., Toledo; C. R. Kelly, Monarch Marking System Co., Dayton; J. C. Shirley, Green Bag Cement Co., Kenova, W. Va.; E. C. Walker, Kendall Refining Co., Bradford, Pa.; R. E. Weadon, the Bundy Incubator Co., Springfield, O.; and E. L. Clayton, Philip Carey Manufacturing Co., Cincinnati.

PRESIDENT ALJIAN OF NATIONAL VISITS SPRINGFIELD, O.

President George W. Aljian of the National Association, and Vice President Ralph O. Keefer, were guest speakers at a joint meeting of the Columbus, Dayton, and Springfield local associations at Springfield, Ohio, October 31st.

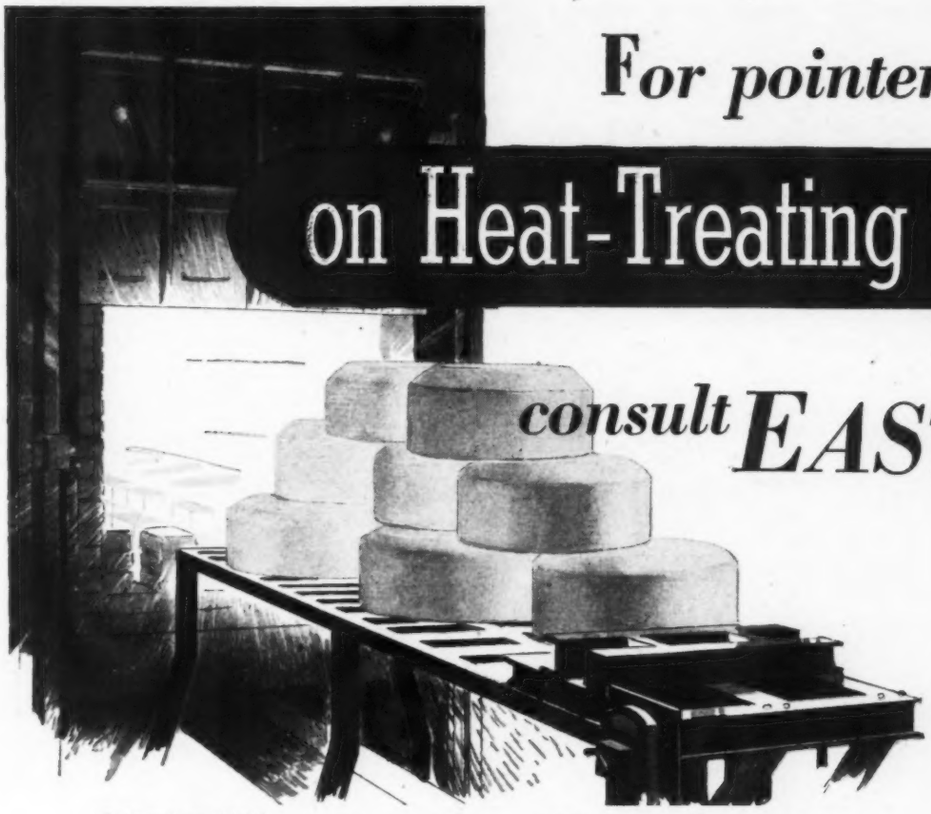
At the September 25th meeting of the Springfield Association, a committee consisting of B. F. Downey, F. H. Andrews, Arthur Stoll and Joe Cheetham was appointed to prepare a historical review of the Springfield association and its activities. A new member, Harold Gilliam, purchasing agent for the Airetool Manufacturing Co., Springfield, was welcomed into the association.

H. N. MCGILL SPEAKS AT LEHIGH VALLEY MEETING

H. N. McGill of McGill Commodity Service, Auburndale, Mass., spoke on "Basic Fundamentals in Business", at the first fall dinner meeting of the Lehigh Valley Purchasing Agents Association at the Elk's Club, Bethlehem, Pa., September 26th. The meeting was featured by an attendance of 129 members and guests.

The afternoon was given over to golf matches at the Saucon Valley Country

(*Continued on page 248*)



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(*Continued from page 242*)

purpose of the Club shall be to encourage and promote social relationship among its members and to maintain a high standard of procedure in all respects."

Membership in the Club is definitely restricted to MEN in purchasing. Eligibility for membership is defined by the constitution as follows: "Any male person whose position is that of a Purchasing Agent or an Assistant shall be considered eligible for membership. Also, any male person whose position is primarily that of a Purchasing Agent or an Assistant, but who has other duties and responsibilities except those of soliciting or selling shall be considered eligible for membership."

The Club, which is not a member of the National Association of Purchasing Agents, now has 70 members. Dinner meetings are held monthly, October to June inclusive. The meetings generally are devoted to group discussion of current procurement and business topics, though once or twice during the season feature speakers are engaged to address special meetings to which business associates are invited.

The new officers and board of directors assuming office for the current year are as follows:

President, John A. Hobson, Sloane-Blabon Corporation;

Vice president, K. R. Loux, Philco Corporation, Battery Division;

Secretary, T. H. Gill, Sloane-Blabon Corporation;

Treasurer, F. R. Weiant, Whitehead Brothers Rubber Company.

Directors: A. T. Holloway, C. V. Hill and Company; M. F. Jones, Fisher Body, General Motors; J. E. Bilbee, Stokes Molded Products Company.

The Club has five committees, as follows:

Program, chairman, J. E. Bilbee, Stokes Molded Products Co.;

Fellowship, chairman, L. Muhs, Trenton Potteries;

Publicity, chairman, R. K. Loux, Philco Corp., Battery Division;

Membership, chairman, F. W. Landolt, Robertson Manufacturing Co.;

Eligibility, chairman, I. H. Drake, Pattern Mach. & Foundry Corp.

Four new members were introduced at the October 3rd meeting, and two applications for membership were duly approved.

UTAH MANUFACTURERS HONOR PURCHASING AGENTS

Members of the Purchasing Agents Association of Utah and the Utah Manufacturers Association met together in Newhouse hotel, Salt Lake City, Thursday evening, September 26th, at a banquet to honor the 25th anniversary of the purchasing agents association. Herbert Weindel, U. M. A. president welcomed the groups, the meeting being presided over by A. C. Moore, vice president of U. M. A.

(*Turn to page 248*)



Courtesy of United Air Lines



R PRODUCT TRAVEL CONSCIOUS?

Among the world's most widely traveled products are the hardware, small tool and machine parts that make up the day by day over the counter, warehouse and tool crib components of our major manufacturing and construction trades. It's a half billion dollar business, moving relatively heavy items requiring shipping containers that must stand the rigors of travel and still be attractive for display. The War brought new metals, automatic machinery and mass production, and reconversion is bringing new merchandising problems. The trend is toward better distribution, safer travel, thanks to set-up boxes.

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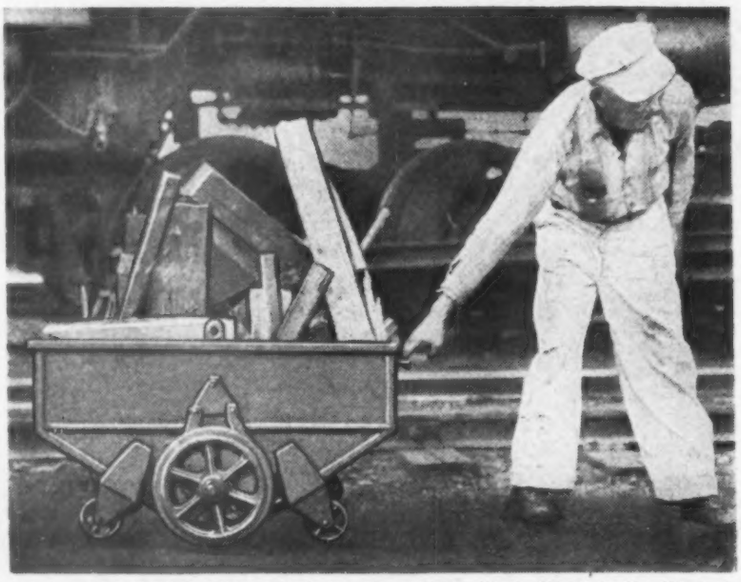
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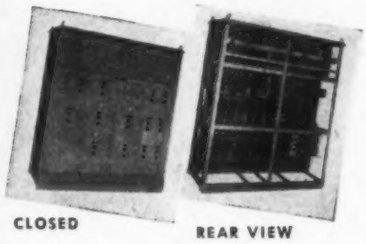


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(*Continued from page 242*)

Club and Green Pond courses, under the direction of H. N. Crowder and Paul Cogan. At the business session, there was a brief memorial service for members who had passed away during the past year. Past President C. Q. Richards was the recipient of a brief case presented by G. L. Baumgartner in token of appreciation of his official activities. Following Mr. McGill's talk, the evening was given over to music and other entertainment.

CONNECTICUT ASSN. MEETS AT WATERBURY COUNTRY CLUB

The Purchasing Agents Association of Connecticut opened the fall season at Waterbury Country Club on September 24th, dedicating the afternoon to golf, followed by the monthly dinner meeting at which Wyman S. Randall, Purchasing Agent for Rust Craft Publishers, Inc., Boston, Mass., discussed some o today's purchasing problems. Mr. Randall is a past president of the New England Purchasing Agents Association, and an instructor of purchasing at Boston University and Northeastern University.

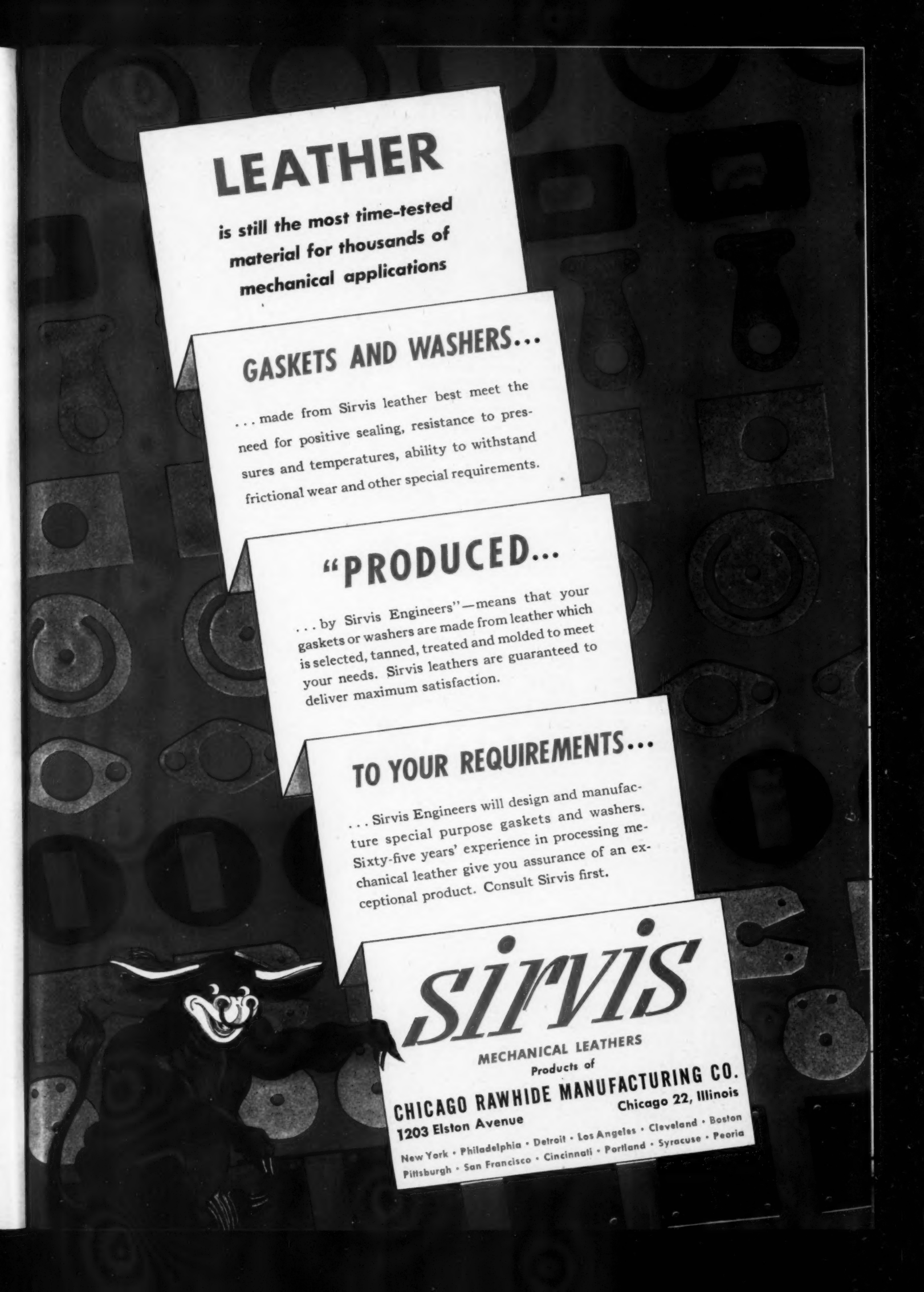
MEMBERS EXPRESS PREFERENCE FOR EDUCATIONAL MATERIAL

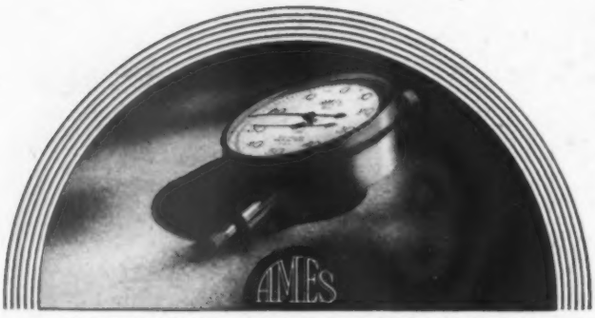
The Educational Committee of the Purchasing Agents Association of Washington, Seattle, Wash., sent a questionnaire to association members for an expression of their preferences for subject matter to be presented at the association's Educational Forum, with the following results: Two subjects, Price trends and Escalator Clauses, Expediting and Delivery problems, scored 73% each; Warehouse and Inventory Control for Production and Service Industries, Third with 64%; Legal Phases of Purchasing, Fourth with 56%; Commodity Terminology and Specifications, Fifth with 46%; Traffic Management, Sixth; Letter Writing, Seventh; Reciprocity, Eighth; Government Regulations, Ninth; Insurance, Tenth. Members expressed a preference for afternoon meetings before the regular monthly evening, and 89% indicated that they would attend the Forum meetings.

COL. WILLARD F. ROCKWELL ADDRESSES TULSA MEETING

Col. Willard F. Rockwell, board chairman and president of the Rockwell Manufacturing Co., Pittsburgh, Pa., and also president of Timken-Detroit Axle Co., and chairman of the board, Standard Steel Spring Co., spoke on "Purchasing Problems under Present Conditions", at the Executive Night Meeting of the Purchasing Agents Association of Tulsa, September 24th, at the Chamber of Commerce. Some 250 association members, executives of member companies and other invited guests were present.

(*Turn to page* 250)


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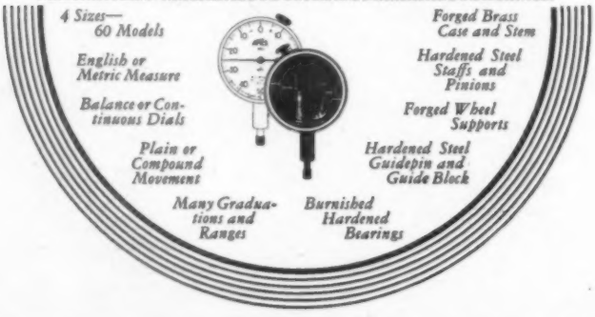


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SEATTLE PURCHASING AGENTS VISIT NEW PIPE PLANT

Industrial and commercial purchasing agents of Seattle, Wash., and vicinity inspected the new modern-as-tomorrow plant of the Kirsten Pipe Company a 1165 Eastlake Avenue, Seattle, Thursday, September 26th. Arrangements for the visitation were made by the plant visits committee of the Purchasing Agents Association of Washington, of which John Leptich is chairman. The visitors were conducted through the plant by Charles K. Wiggins, executive vice president; H. R. Washington, executive assistant, and Stuart C. Gillespie, purchasing agent.

ENGLAND AFTER THE WAR ROCHESTER MEETING

Dr. Dexter Perkins, head of the History Department, University of Rochester, who recently spent a year in England as visiting professor at Cambridge University, spoke on "England After the War" at the September 25th meeting of the Purchasing Agents Association of Rochester, at the Powers Hotel in that city.

METROPOLITAN CLUB SEES MOTION PICTURES ON STEEL PRODUCTION

H. A. Ottey of the Lukens Steel Company was guest speaker at the October 8th meeting of the Metropolitan Purchasers' Assistants Club at Midston House, New York City. In connection with his talk two motion pictures were shown, namely, "World's Largest Plate Mill", in technicolor, and "Headwards". Paul Stokes, chairman of the association's membership committee, introduced two new members, Frank L. Meisner of Clarence Whitman & Sons, Inc., and John J. Sharkey of Culbert Pipe & Fittings Company. A. A. Northacker of the M. W. Kellogg Company led a discussion on "Expediting in War and Peace" preceding the regular meeting.

CENTRAL NEW YORK P.A.S. VISIT ROME COPPER PLANTS

The September meeting of the Purchasing Agents Association of Syracuse and Central New York on September 25th, was an all-day affair, visiting copper plants at Rome, New York, and concluding with dinner meeting at the Teugega Country Club at which a technicolor movie "Copper and Its Alloys" was shown. The plants visited were those of Revere Copper & Brass, Inc., where flat rolled copper, brass and alloys, nonferrous bars and wires, etc. are produced, and the Rome Manufacturing Division of Revere which fabricates a portion of Revere's raw material output into semi-finished or finished goods. The plant visitations commenced at 10:30 A.M., followed by luncheon at the Teugega club.

(Turn to page 254)

NEW FREEDOM *from* Concealed Defects



MILLIONS OF HORSEPOWER

developed at impact

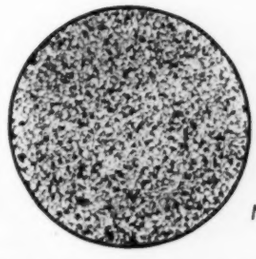
Assure the Soundness of LADISH FORGED STEEL FITTINGS

Up to 20,000,000 horsepower are developed during that split second of impact when one of our giant steam drop hammers strikes the Controlled Quality steel that goes into Ladish Forged Steel Fittings.

These tremendous impact pressures . . . applied when the top quality steel has been heated to correct plasticity . . . produce a denser, more homogeneous metal structure, eliminating the possibility of concealed defects and porosity which can often be the cause of premature leaks and failures.

This soundness that means dependable, trouble-free service is inherent in every Ladish Forged Steel Fitting . . . just one reason why it's *sound* economy always to specify Ladish Forged Steel Fittings for your piping requirements.

A micro section of any Ladish Forged Steel Fitting shows uniformity and refined metallic structure, completely free of defects.



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Write today for this valuable engineering design and technical data book. Ask for Ladish Forged Steel Fittings Catalog, Volume II.

Everything in Piping Equipment for Process Industries

In this paint plant you see a picture of the large perennial task that faces you and every processing plant. The task of maintaining vast and varied piping systems at peak efficiency.

How best to do it? Take a tip on how many leading plants make it a much simpler task—from design to erection to maintenance of pipe lines for every service.

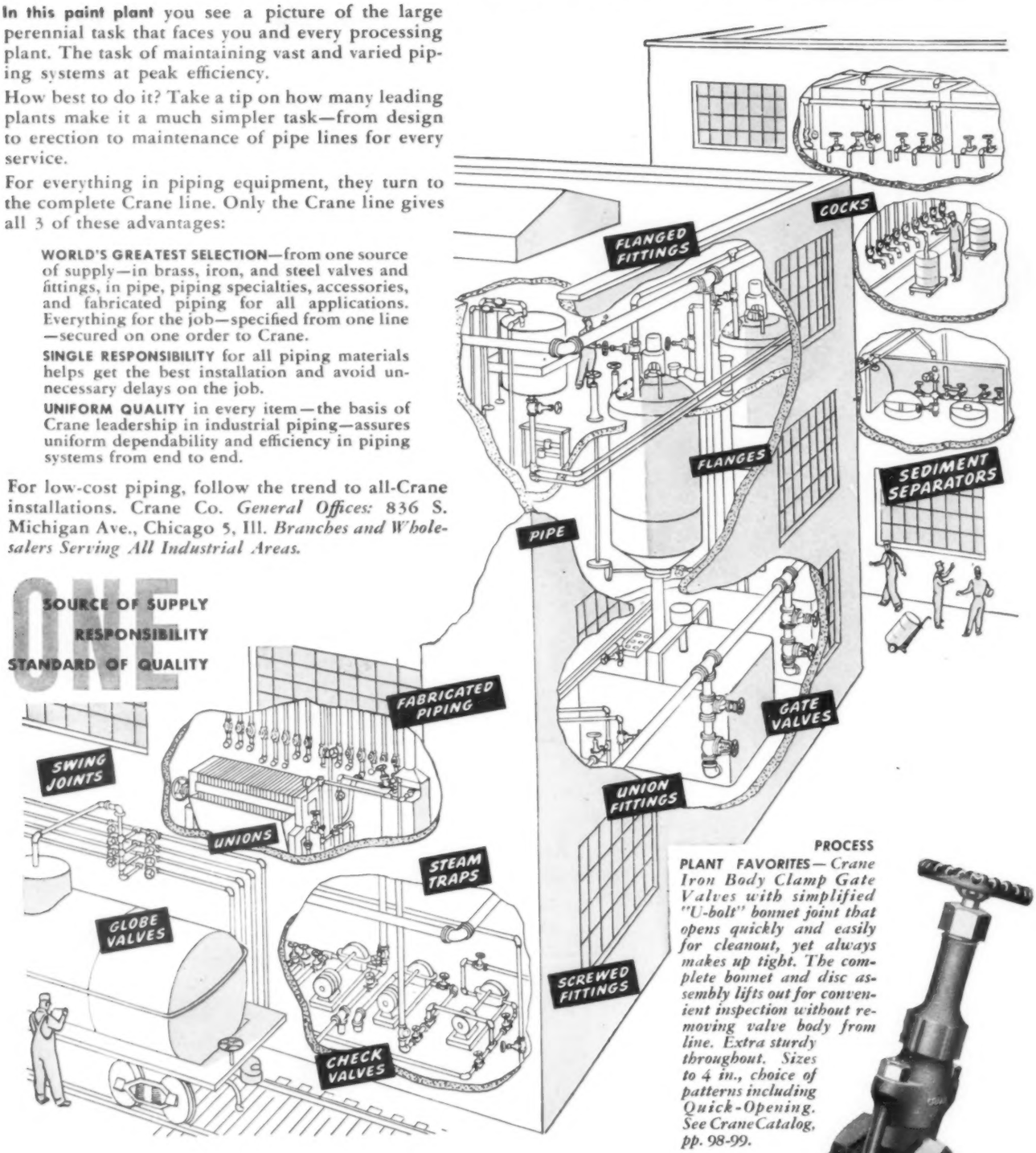
For everything in piping equipment, they turn to the complete Crane line. Only the Crane line gives all 3 of these advantages:

WORLD'S GREATEST SELECTION—from one source of supply—in brass, iron, and steel valves and fittings, in pipe, piping specialties, accessories, and fabricated piping for all applications. Everything for the job—specified from one line—secured on one order to Crane.

SINGLE RESPONSIBILITY for all piping materials helps get the best installation and avoid unnecessary delays on the job.

UNIFORM QUALITY in every item—the basis of Crane leadership in industrial piping—assures uniform dependability and efficiency in piping systems from end to end.

For low-cost piping, follow the trend to all-Crane installations. Crane Co. *General Offices:* 836 S. Michigan Ave., Chicago 5, Ill. *Branches and Wholesalers Serving All Industrial Areas.*



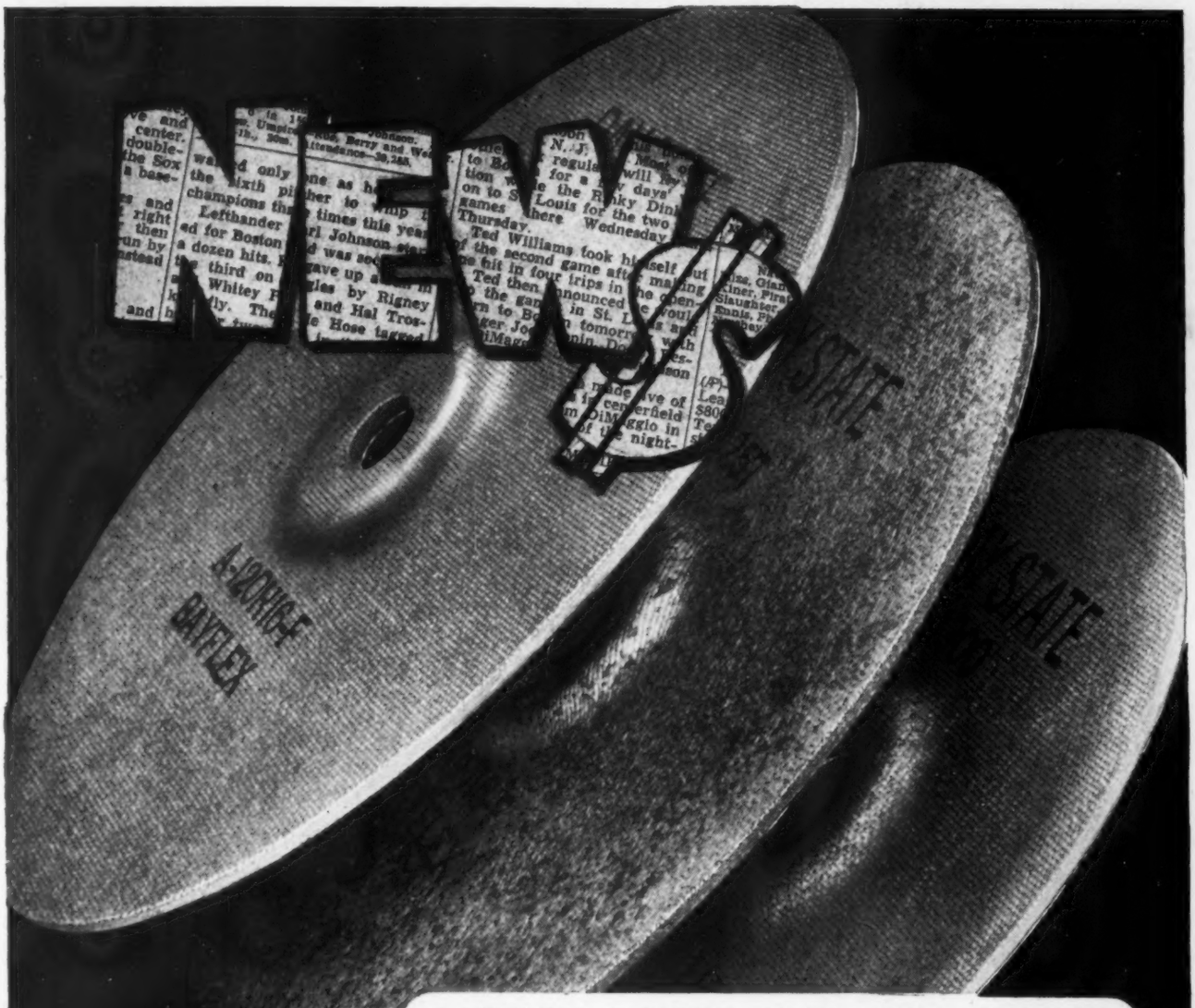
PROCESS PLANT FAVORITES—*Crane Iron Body Clamp Gate Valves with simplified "U-bolt" bonnet joint that opens quickly and easily for cleanout, yet always makes up tight. The complete bonnet and disc assembly lifts out for convenient inspection without removing valve body from line. Extra sturdy throughout. Sizes to 4 in., choice of patterns including Quick-Opening. See Crane Catalog, pp. 98-99.*

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FOR EVERY PIPING SYSTEM



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are outwearing coated abrasive discs on thousands of jobs. This is really good news for foundries, welding shops, sheet metal shops, automobile and truck body repair shops, or wherever grinding and polishing of any type of welded or brazed metal is a problem.

ADVANTAGES:

1—Flat surface and edge can be used for grinding. Edge can also be used for cutting off
2—Excellent for grinding aluminum castings.
3—No "loading" under normal conditions.
4—Unexcelled for grinding into grooves and corners, and large radii on castings.
5—Will fit any standard machine using coated discs.
6—Bayflex discs, unlike coated discs, can be used efficiently right down to the nut This means time and money saved.
7—Available in a variety of abrasive grit sizes.

A trial will prove their worth. Write for bulletin for further information.

Branch offices and warehouses — Chicago — Detroit. Distributors — All principal cities

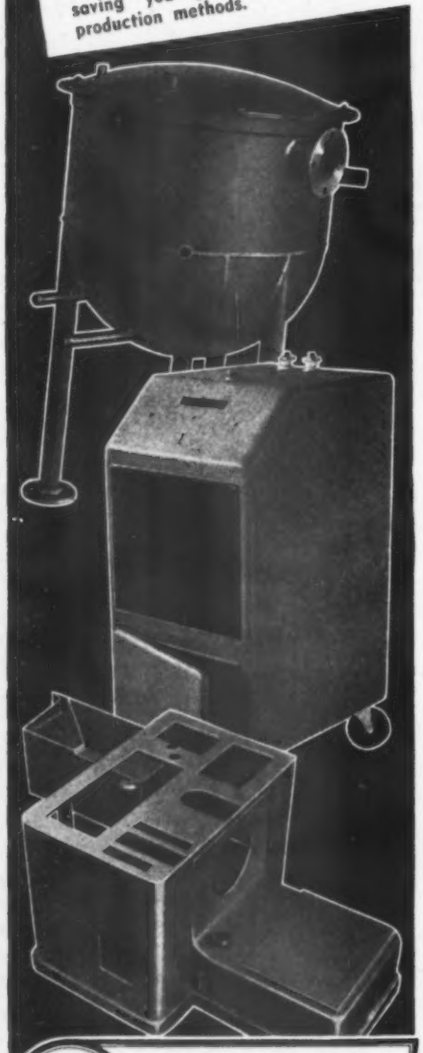
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Annual Business Conference Canadian Associations

The Twenty-first Annual Business Conference of the Council of Canadian Purchasing Agents Association, was held at the Royal Connaught Hotel, Hamilton, Ontario, October 18th and 19th.

J. Frank Stephenson, president of the Hamilton Association, presided at the October 18th morning business session, following remarks by General Chairman, B. H. Yardley, and an address of welcome by Mayor Samuel Lawrence. The speakers were as follows:

Stuart Armour, Associate of Professor Gilbert E. Jackson, O.B.E., Economic Research Projects, Toronto, subject: "Influences of World Affairs Relating to Business in Canada".

George Ritchie, Commissioner, Unemployment Insurance Commission, Ottawa, Ont., subject: "Labor Situation in Canada."

F. W. Collins, Industrial Manager, Canadian Pacific Railways, Montreal, Que., subject: "Industrial Transportation Development".

George W. Aljian, president of the National Association of Purchasing Agents, was speaker at the Friday Luncheon meeting, his subject being, "Responsibilities of the Purchasing Agent". The chairman of the luncheon meeting was Garnet T. Dickson, president, Council of Canadian Purchasing Agents Associations, and vice president of District No. 5 of the N.A.P.A.

Friday Afternoon

Harvey T. Sprang, president of the Toronto Association, presided over the afternoon session, at which the first speaker was Dr. S. Bateson, Chief Physicist, Fiber Glass Co., Oshawa, Ont., whose subject was "Research in Industry".

Garnet T. Dickson, president of the Canadian Council, was the next speaker, his subject dealing with "Activities of the Council of Canadian Purchasing Agents' Associations".

The principal feature of the afternoon meeting was a Panel Discussion on Industrial Trends in Canada", in which the following participated: D. B. McCoy, vice president and general sales manager, The Steel Company of Canada Ltd., Hamilton; H. A. Cooch, vice president and manager of sales, The Canadian Westinghouse Co., Hamilton; Hon. Russell T. Kelley, Minister of Health for Ontario; E. V. Illsey, general manager, Hamilton office, Canadian Bank of Commerce; and W. J. McCulloch, managing secretary, Hamilton Chamber of Commerce.

P. A. Walker, national director, Hamilton Association, was chairman of dinner meeting Friday evening, at which Ed. Ruda, president, Ruda Printing Co., Rochester, N. Y., spoke on "Sense and Nonsense".

Saturday Meetings

Jack Brigg, president Montreal Association, was chairman of the Saturday morning session, which commenced with a Commodity Discussion under the direction of E. M. Fletcher, Robinson Industries Ltd. and H. F. Wittson, N. Slater Co. Ltd., of the Hamilton Association.

George Renard, executive secretary-treasurer of the NA.P.A., was the next speaker, discussing current conditions and responsibilities of industrial purchasing agents under the theme "From one P. A. to Another".

C. H. Bayley, Division of Chemistry, National Research Council, Ottawa, Ont., was the next speaker, his subject being "New and Substitute Materials".

Gladstone Murray, policy counsel, Responsible Enterprises, Toronto, addressed the meeting, using for his subject, "Forecast Canadian Economy".

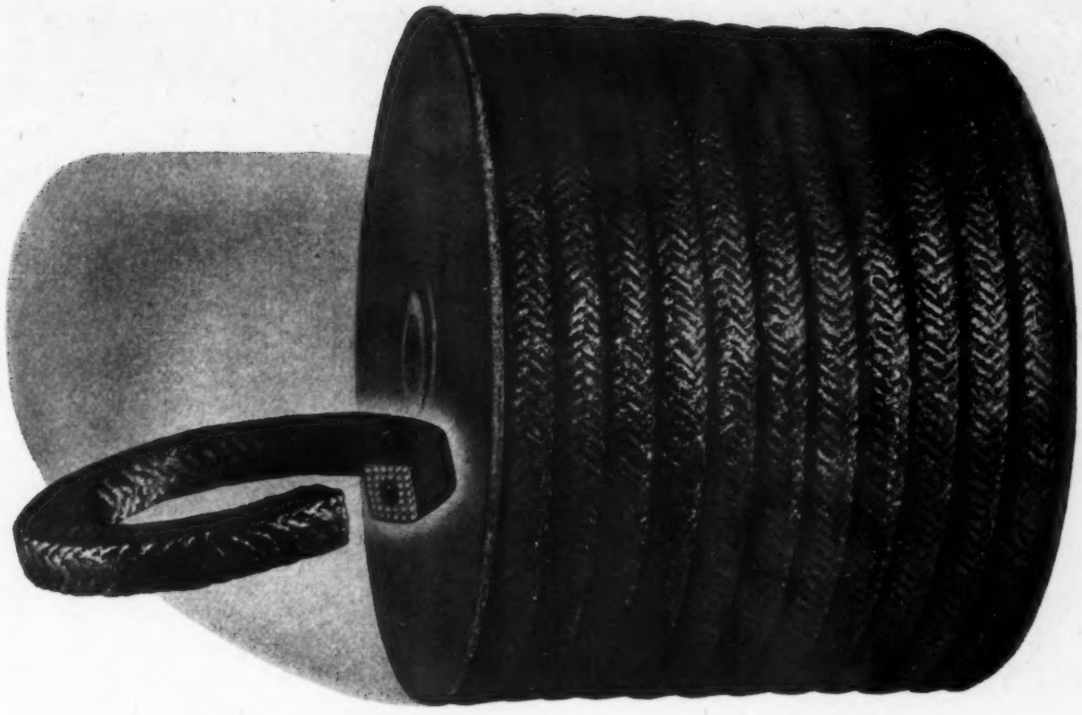
At luncheon meeting on Saturday, an address was made by Dr. A. Wingfield, B.A.Sc. The meeting concluded with annual banquet and entertainment Saturday evening, this affair being presided over by B. H. Yardley, The Stanley Works of Canada Ltd., Hamilton. Principal speaker at this meeting was Sydney R. Montague, ex-member R.C.M.P., whose address was "Opportunities North". An interesting feature at this meeting was presentation of the Cherry Award by Mrs. Arthur Cherry, in Arthur Cherry Memorial Essay Contest on the subject "How Purchasing can Best Dovetail with Production, Sales and Management for Efficiency and Goodwill", sponsored by Mrs. Cherry in memory of her husband who for many years was a member of the Toronto association, and at the time of his death, purchasing agent for Canadian General Electric Co. Ltd.

MEMPHIS ASSOCIATION WELCOMES FIVE NEW MEMBERS

Prof. C. S. Brown, Memphis State College, spoke on "Monetary Theory", and R. E. Kennedy, Supervisor Training and Educational Unit, Veterans Administration, gave a talk on "Training and Education of Veterans", at the September dinner-meeting of the Purchasing Agents Association of Memphis. Five new members were welcomed into the associati namely: Thomas B. Rhodes, Conley Frog & Switch Co.; B. R. McIntyre, Lewis Diesel Engine Co.; Henry A. Brownlee, Malco Theatres, Inc.; Sol Kaplan, Keystone Laboratories; and Joel Freedman. Abraham Bros. Packing Company.

The following delegates from the Memphis association attended the Third Annual Conference of Southeast Purchasing Agents at Birmingham, October 10-11: Mrs. Harris Ballinger, Mr. & Mrs. Sue Berry, Aaron Brenner, R. Breimon, R. P. Durick, Miss Ann Smith, Sol O'Nell, G. R. McCalla, J. W. McNeese, James Pidgeon, W. E. Rier, Otis G. Smith, Miss Mary Speltz, M. A. Stepherson, Jr., and Martin Sunderland.

(*Turn to page 256*)



R/M HIGH TEMPERATURE VALVE STEM PACKING

Here is a typical example of the way in which all R/M packings are designed to meet specific conditions. This packing was created to furnish a tight seal around valve stems and in expansion joints handling super-heated steam or hot gases at temperatures up to 900°F.

It is manufactured by braiding a jacket of Monel wire and pure asbestos yarns over a soft graphite core. The jacket contains a binder that resists high temperature, and the exterior is coated with flake graphite. The graphite core is not affected by heat and allows the packing to change cross section when gland pressure is applied.

For all industrial applications . . . for refineries, chemical plants, food plants, distilleries, breweries, dairies, power plants, sewage plants . . . your authorized R/M distributor offers you a full line of specially engineered packings.



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FILM "WINGS OF WIRE" MONTREAL MEETING

A new film entitled "Wings of Wire" was shown at the October 15th meeting of the Purchasing Agents Association of Montreal at the Mount Royal Hotel, through the courtesy of the Northern Electric Company. The film portrays the utilization of wires in the distribution of electrical energy and describes the manufacturing processes of the more common types of wire and cable. The subject of "Sales Tax Regulations" was discussed in the Research Clinic preceding the dinner meeting, under the chairmanship of Fred Samis.

MAGNESIUM DISCUSSED AT SAGINAW VALLEY MEETING

Arthur Lennie of The Dow Chemical Company, Midland, Mich., gave an illustrated talk on "New Uses and Methods of Handling Magnesium Metal," at the regular dinner meeting of the Saginaw Valley Purchasing Agents Association, held at Zenders Hotel, Frankenmuth, Mich., September 10th. Four new members were welcomed into the association, namely: Douglas Stirling, Reid Paper Co.; Wendell Larssen, Bay City Shovels, Inc., Bay City, Mich.; Stuart Milster, Bay City Division of the Dow Chemical Company; and Archie Featherstone of the General Electric Supply Company.

COMMODITY DISCUSSIONS FEATURE BUFFALO MEETING

A series of live commodity discussions featured the regular monthly meeting of the Purchasing Agents Association of Buffalo, at the Hotel Statler, Buffalo, September 11th. Among the speakers were Henry Hebard who reviewed existing problems on manufactured products; Homer Snell, reporting on industrial supplies, and Joe Mueller who reported on printing problems and conditions. The discussions elicited many questions and much comment on current conditions. Almost every member agreed that inventories in many items are dangerously low, and delivery of light gage sheets, lead, paper and many other items is more critical now than during the war period. The meeting was attended by 56 members and one guest.

Members of the Buffalo Association joined with the Rochester Association and other associations, to honor President George W. Aljian of the National Association at meeting in Rochester on October 23rd.

BUYER OR SALESMAN? LOUISVILLE MEETING

Past presidents of the Purchasing Agents Association of Louisville, Ky., were honored at dinner meeting on September 17th at the Kentucky Hotel, the most recent of them, A. E. Loeffler Jr., being presented with a framed cer-

(*Continued on page 258*)

METAL-CUTTING LUBRICATION

PERFECT RESULTS in Drilling, Reaming, Boring and Milling of Aluminum

"Recently we were called in to the plant of a large manufacturer in Ohio to look over a Cutting Oil job on aluminum work.

"The material to be formed was an aluminum die cast block. This block is a part of the lock mechanism on bank vaults and consequently must be about perfect in the machining.

Lubrication Engineer's Report

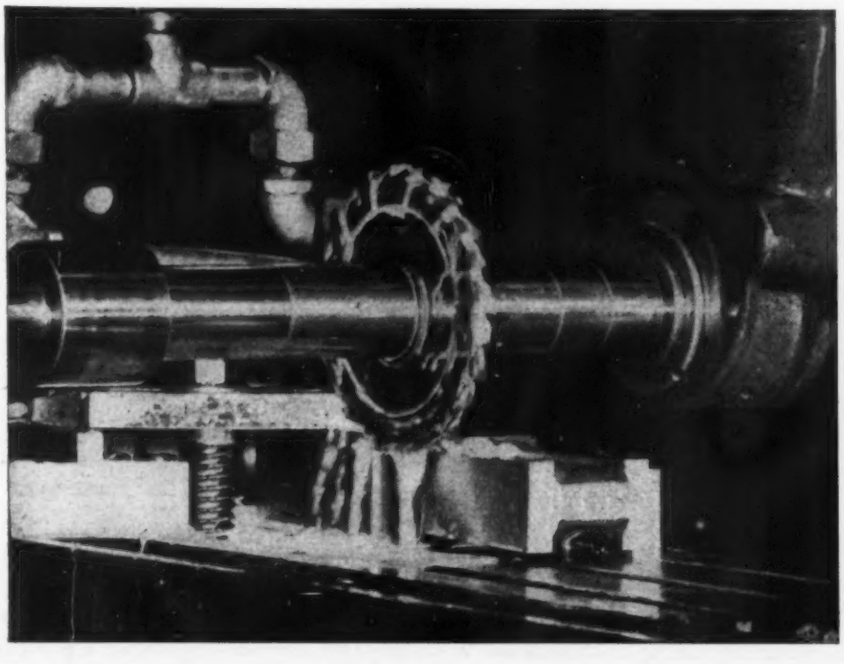
"The work to be done on this block included drilling, reaming, boring and milling.

"After studying the conditions, we recommended Cities Service Chillo Oil No. 22 and received an order for a drum of this material for trial use.

"We were called back about two weeks later and the plant superintendent came up with one of the blocks which he had machined with the oil recommended. He was completely satisfied with the results. The block had not only a smooth machine finish, but a completely burnished finish. It was a beautiful piece of work.

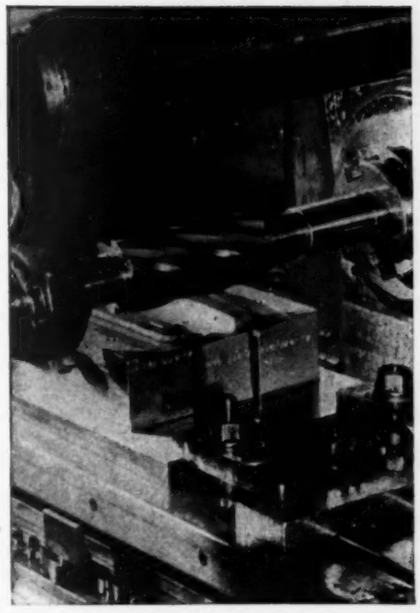
Smooth, Burnished Finish

"As a result this plant has standardized on Chillo Oil No. 22 for all aluminum machining and we are currently receiving orders for the oil as required.



"Our unusually successful experience with Chillo Oil No. 22 leads us to recommend it for practically all aluminum machine work."

Through continual contact with the many and varied lubrication problems encountered by industry over the years, Cities Service Lubrication Engineers have accumulated considerable information on ways and means for reducing costs and improving the performance of lubricants. Why not find out for yourself how they can help *you!* Contact your nearest Cities Service branch office or write to Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y. (In the South, Arkansas Fuel Oil Company.)



Expert Counsel Available

FOR EVERY LUBRICATION PROBLEM

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METAL CLEANING is only one of the many fields where definitely superior cleaning speed and quality with virtual elimination of hand work can be obtained by the use of the

MAGNUS AJA-DIP CLEANING MACHINE
(Patented)

If you do any metal cleaning, write for the new bulletin illustrated above. And if you do any cleaning outside this field, write for data on Magnus materials, methods and machines on your type of operation.

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MAGNUS Cleaners • Methods • Machines

Look to TRUMBULL
AS YOUR DEPENDABLE SOURCE OF SUPPLY

NEW . . . TO THE ELECTRICAL INDUSTRY . . . IN SPEED OF TRIPPING . . . IN COMPACT STREAMLINE DESIGN.



MO-4 MULTIBREAKER

Thousands of locations require a sentry to guard 4 single phase circuits or less . . . for which duty Trumbull recommends the MO-4 multibreaker . . . NEW . . . to the Electrical Industry . . . an improvement of the MO-2, tested during war years in millions of circuits actually installed. Low in cost, yet with both automatic and short circuit protection for branch circuits . . . circuit breaker with combined thermal and magnetic characteristics . . . for greatest tripping speed. Has wide application in homes, garages, apartments, small stores . . . is ideal for camp and farm installations. See your Trumbull Electrical Wholesaler.

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THE TRUMBULL ELECTRIC MFG. CO. • PLAINVILLE, CONN.
OTHER FACTORIES AT NORWOOD, O. — SEATTLE, SAN FRANCISCO, LOS ANGELES

(*Continued from page 256*)

tificate of appreciation by former president G. W. Leep.

This was the first business meeting since last May and a full program has been arranged. This included the usual round-up of the economic situation by Professor C. W. Williams and a talk by Briant Sando, general sales manager of the Courier-Journal Job Printing Company, whose subject was "Are You a Buyer or a Salesman?"

The following new members were approved at this meeting: Harry Resnick, Acme Paper Stock Co.; Harold Theobald, Theobald Electric Co.; V. H. Hulette, Ford Motor Co.; Normert J. Allgeirer, Miller Paper Co.; John M. Cassin, Gulf Refining Co.; and W. R. Larkin, Cummins Collins Distillery Company.

DISCUSS SCHOOL LIGHTING BIRMINGHAM MEETING

E. B. Richey, lighting consultant, formerly lighting specialist for the Birmingham Electric Company was guest speaker at the September 26th dinner meeting of the Purchasing Agents Association of Alabama, at the Thomas Jefferson Hotel. Mr. Richey reviewed the lighting program underway in Birmingham's public schools.

TELLS ABOUT PENNSYLVANIA R. R. EQUIPMENT AT WILMINGTON MEETING

H. L. Stanton, superintendent of the telegraph and signal division of the Pennsylvania Railroad, told about new equipment being obtained by the Pennsylvania Railroad, at luncheon meeting of the Industrial Purchasing Agents of Wilmington, in Hotel DuPont. Among the equipment obtained, Mr. Stanton said, are 1,100 new and larger box cars, 3,611 passenger car units, and the authorized experimental application of the non-inductive trainphone system for through passenger train operation between Harrisburg and Pittsburgh.

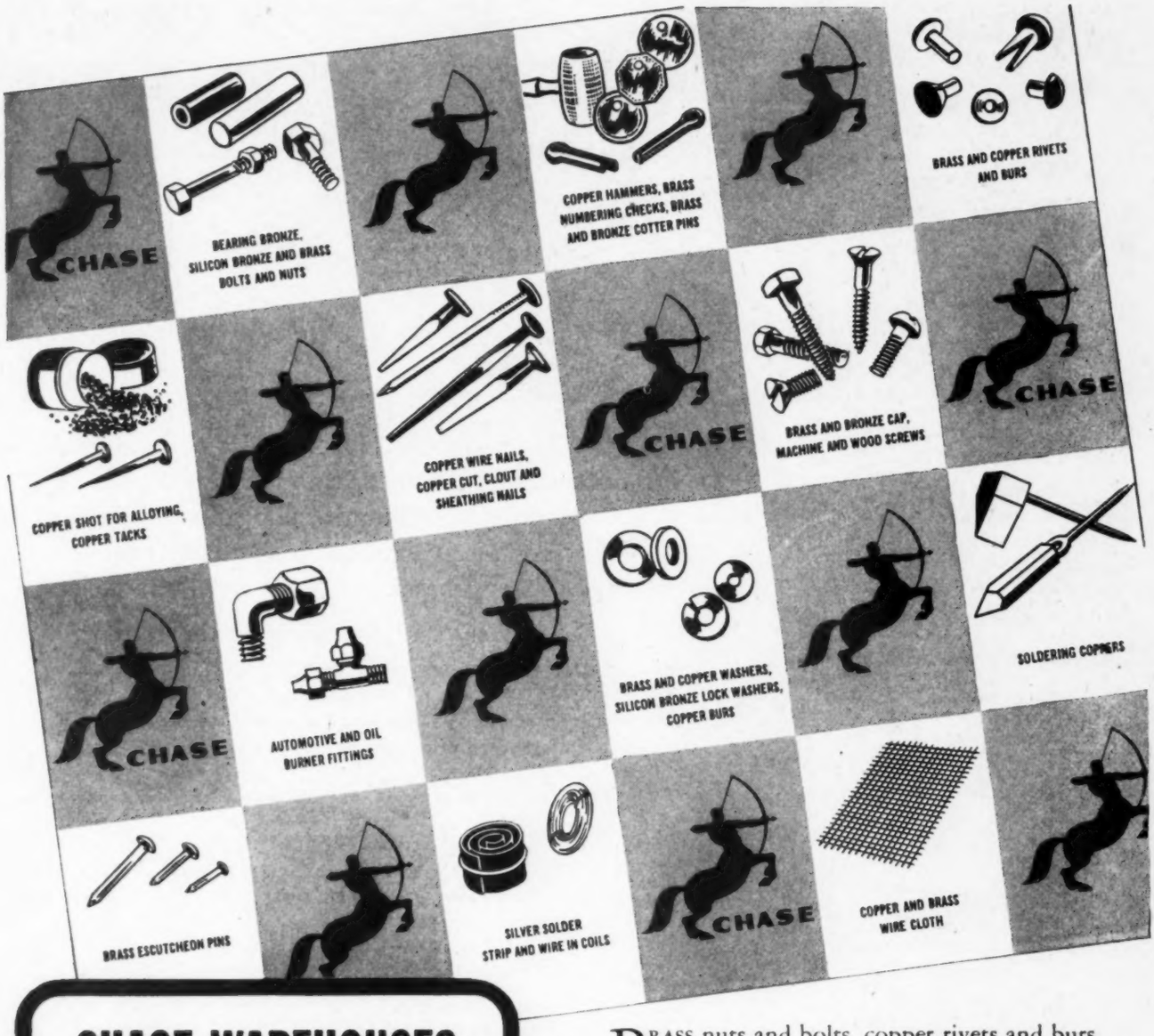
"NEW FRONTIERS FOR SMART PEOPLE"—CHICAGO

Dr. James Shelby Thomas, former head of the Chrysler Institute of Engineering and head of the Clarkson College of Technology, spoke on "New Frontiers for Smart People" at the regular monthly meeting of the Purchasing Agents Association of Chicago, at the Hotel Sherman October 10th.

ECONOMIC TRENDS DAYTON MEETING

Dr. Henry C. Hodges, management consultant, discussed the broad subject "Economic Trends" at the September 12th meeting of the Purchasing Agents Association of Dayton, Ohio, covering such phases as Prices, Production and

(*Continued on page 262*)



CHASE WAREHOUSES have these Miscellaneous items in stock

BRASS nuts and bolts, copper rivets and burs —all these and more—are carried in stock at Chase warehouses.

There are 20 Chase warehouses coast to coast. Phone the one nearest you. If they do not have what you want in stock, they'll try to get it for you from one of the many other Chase warehouses.

Remember— CHASE SERVICE IS AS CLOSE AS YOUR PHONE

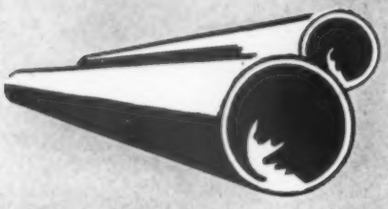
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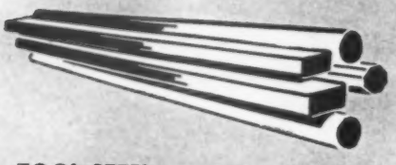
This is the Chase Network—handiest way to buy brass — INCORPORATED —

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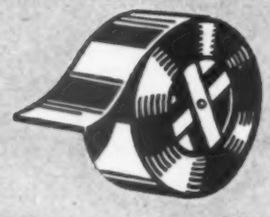
BARGAIN PRICES ON



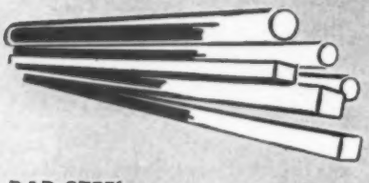
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Carbon, Alloy and some Stainless. Both Welded and Seamless.



TOOL STEEL
Water-hardening, Oil-hardening and High Speed Grades.



STRIP STEEL
Hot Rolled, Cold Rolled, Carbon, Alloy, and Stainless.



BAR STEEL
Hot Rolled and Cold Finished in Carbon, Alloy, and Stainless.

All steel is subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

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NO WAITING FOR

HIGH GRADE

Steel

Alloy steel billets, blooms, bars, plates, are all immediately available through your War Assets Administration. Bars include rounds, squares, flats and hexagons. Suitable for substitute and re-rolling purposes.

Low prices on this high grade steel make it practical for low-cost products.

For complete information on steel send this coupon to your nearest WAA Regional Office:

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Please send me, without obligation, full information on the availability, condition and location of the following checked items:

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2. Carbon and Alloy Bars ☐
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6. Mechanical Tubing, Carbon, Alloy, and Stainless ☐

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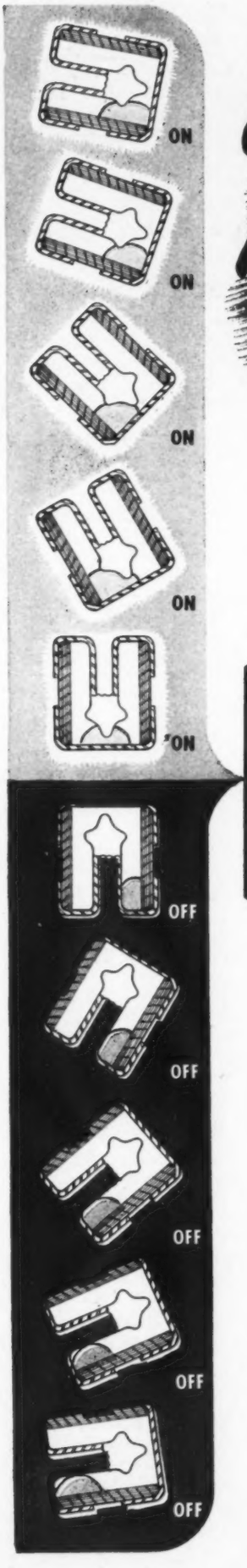
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New MERCURY SWITCH

FOR USE ON NON-INDUCTIVE LOADS OF 35 WATTS OR LESS AND CIRCUITS UP TO 32 VOLTS A.C. OR D.C.

Mounting angle determines operating point, so circuit can be closed or opened at any desired position. Mount in door of glove or luggage compartment, cockpit, hatch, etc. to turn lights on (or off) when doors are opened. Also used for turn and bank indicators, thermostat control circuits, pilot lights, pin-game mechanisms, radio or phonograph doors, and numerous other applications in many and widely diversified fields. Littelfuse precision Mountings also available.



Actual Size *Switch only 3/8" in diameter by 1/4" long. Mounting 2 1/8" by 1/8" by 11/16", overall.*

Baffle Prevents Flicker

Collar-button type center electrode prevents "rolling" motion or resulting position of switch from affecting operation in any way. Baffle near tip of center electrode prevents splashing of mercury and the resulting flicker, such as might otherwise be encountered in an automobile traveling over rough roads. Switch is bakelite enclosed, with nickel-plated steel end caps. "Dimple" in one end cap provides quick, easy identification of "dead" end. Recommended temperature resistance; maximum ambient temperature 180°, minimum—38°, Fahrenheit.

Long-Lasting and Dependable

Laboratory tests show over 1,000,000 operating cycles at 6 volts with a 10-ampere solenoid load (almost twice the rated capacity), and 3,000,000 operating cycles at 6 volts with a 5-ampere solenoid load (slightly under the rated capacity), both loads being slightly inductive. Switch is designed to operate with a minimum deviation of 10 degrees on the "make" and 15 degrees on the "break," but a wider operating angle still further increases the life. Switches with smaller operating angles can be supplied on special order. A scientifically designed, precision built product. Write, phone or wire for prices.

LITTELFUSE FIRST IN CIRCUIT PROTECTION *Incorporated*

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NITE-T-LITE • SWITCH-LITE • IGNITION-FRITZ • NEON INDICATORS • SWITCHES • CIRCUIT BREAKERS • FUSES, MOUNTINGS & ACCESSORIES



Handling Problems Deserve *Special* Attention

EVERY manufacturer, in striving to keep costs at a minimum, must deal with more or less difficult material handling problems. These are not always quickly solved, and usually require considerable thought by plant and conveyer engineers. Most experienced plant engineers agree that the use of Mathews methods and Mathews equipment means efficient material handling. That is why Mathews Engineers are usually called in on the problem requiring special attention. There are many types of Mathews Conveyers of both gravity and power designs, and from these types are selected the units which make up Mathews continuous flow conveyer systems. It is with such systems that prominent manufacturers are reducing worker fatigue and keeping materials moving through processing machinery, storage and shipping, with a minimum of product re-handling, costly confusion and delay.

It might be that a Mathews Engineer can show you what others in your industry have done to improve their material handling. We will welcome your inquiry and give it prompt and thorough service.

MATHEWS CONVEYER COMPANY
ELLWOOD CITY, PENNSYLVANIA
SAN FRANCISCO, CAL. • PORT HOPE, ONT.
ENGINEERING OFFICES IN PRINCIPAL CITIES

(*Continued from page 258*)

Demand, in the course of which he stated that at present the outstanding factor in the economic trend is "confusion." Dr. Hodges will henceforth be a regular speaker at the association's monthly meetings. A new member was welcomed into the association at this meeting—John B. Olsson, purchasing agent, Gray Laboratories.

PURCHASING COURSE, UNIVERSITY OF CALIFORNIA

Accredited course in purchasing under the auspices of University of California Extension, was inaugurated in September, under arrangements made by the educational committee of the Purchasing Agents Association of Los Angeles. The chairman of the committee is David L. Wilt, purchasing agent, University of California. The instructor is Edwin H. Webster, an authority in his field from the standpoint of high academic standing as well as practical experience. The course deals with basic and fundamental purchasing techniques, and at its conclusion will include advanced subjects so that the entire field will have been served. It includes eighteen weekly Monday evening meetings and for those who are interested, offers three units of University credit. The University's schedule describes the course as follows:

"Organization and functions of the Purchasing Department of an industrial enterprise; purchasing procedures in the open markets and in markets under government regulation; priorities and allocations; sources of supplies; prices, markets and forward buying; specifications and inspection relative to both quality and quantity; the traffic of materials; the purchasing department budget; relationship of purchasing to production and to the inventory control system; centralized and decentralized purchasing."

MILWAUKEE ASSOCIATION ADDS FOUR NEW MEMBERS

Secretary C. H. Dawley announced acceptance by the Board of Directors of four new members as follows at the October 8th dinner meeting of the Milwaukee Association of Purchasing Agents held at the Elks Club: Active, Gunnard Odelberg, Vincent-McCall Co., and R. E. Thomas, Dumore Co.; Associate, Du Wane J. Busse, Durant Manufacturing Co., and Edmund A. Koepke, Lakeside Bridge & Steel Company.

SAFEGUARDING SAVINGS FORT WORTH MEETING

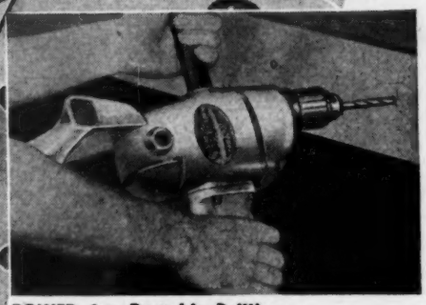
J. L. Pritchett, manager of the Better Business Bureau, Fort Worth, Tex., spoke on "Safeguarding of Wartime Savings" at the September 17th meeting of the Purchasing Agents Association of Fort Worth. He reviewed the service his organization is rendering business organizations as well as individuals.

(*Turn to page 264*)

Wherever You Use This Powerful Drill

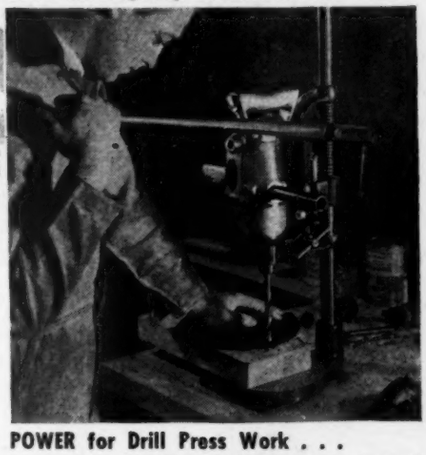
YOU'RE SURE OF SPEEDIER WORK AT LOWER COST!





POWER for Portable Drilling . . .

The Van Dorn ½" Standard Drill has correct spindle speed for driving twist drills up to ½" in steel and all other metals, using high-speed or carbon steel bits. Drives wood augers up to 1" in hardwood.



POWER for Drill Press Work . . .

Mounted in a Van Dorn Drill Stand with plenty of leverage for tough drilling. Smooth, positive feed helps on more precise work. One-hand operation makes it easier to guide work.



POWER for Hole Sawing . . .

The ½" *Standard* Drill drives Van Dorn Hole Saws for cutting clean, round holes up to 3½" in diameter, in any material a hacksaw will cut, a lot faster . . . as portable tool or drill press.

FOR POWER SPECIFY

SEND FOR OUR FREE CATALOG

It gives detailed information on over 100 Van Dorn Portable Electric Tools and over 1,000 accessories. Your nearby Van Dorn Distributor will be glad to give you all the facts on this Drill, help you on any tooling problem. Ask him today! The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Md.

"Van Dorn"

(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS



DISCUSS PALESTINE AT UTAH MEETING

J. L. White, attorney and president of the B'Nai Brith organization, discussed the international aspects of the Palestine situation at meeting of the Purchasing Agents Association of Utah at the Newhouse Hotel, Salt Lake City, September 12th. C. R. Sleater, purchasing agent for the Denver & Rio Grande Western Railroad Co., was elected secretary of the association, to fill vacancy made by the resignation of John Carr.

ALJIAN GUEST OF NEW ENGLAND ASSOCIATIONS

President George W. Aljian of the National Association, and Charles M. Healey, Jr., District vice president, were guest speakers at the first meeting of the 42nd year of the New England Purchasing Agents Association held at Schraffts, Boston, on October 14th. This was a joint meeting of the New England and Rhode Island associations.

On October 15th, Mr. Aljian and Mr. Healey were guests at joint meeting of the Connecticut and Western Massachusetts Associations held in Hartford, Connecticut.

"PURCHASING YARDSTICKS" SEATTLE MEETING

E. H. Weaver, manager of purchases, Union Oil Company of California, Los Angeles, spoke on "Purchasing Yardsticks" at the October 10th meeting of the Purchasing Agents Association of Washington, at the Washington Athletic Club, Seattle, Wash. His talk was followed by a showing of moving picture film entitled "Oil for Tomorrow" through courtesy of the Union Oil Company. At the educational forum preceding the dinner meeting, the subject "Expediting and Delivery Problems" was discussed, the speakers being Watt Fallis, purchasing agent, Kenworth Motor Truck Corporation; E. Wm. Johnson, purchasing agent, Boeing Aircraft Co., and Felix McLarney, buyer, Crown Zellerbach Corporation. Harold D. Mitchell, purchasing agent, Housing Authority of King County, is chairman of the educational committee.

NEW ENGLAND ASSOCIATION RESUMES PLANT VISITS

Under the direction of D. G. Donovan, chairman of Plant Visits Committee of the New England Purchasing Agents Association, members of the Association made their first plant visit since the war, at the Ipswich plant of Sylvania Electric Products Inc., where fluorescent fixtures are made, on October 2nd. The visiting purchasing agents arrived at the plant at 10:00 A.M., and after going through the varied departments, assembled in the plant cafeteria for lunch, after which they adjourned to the Salem Country Club for golf and other activities.

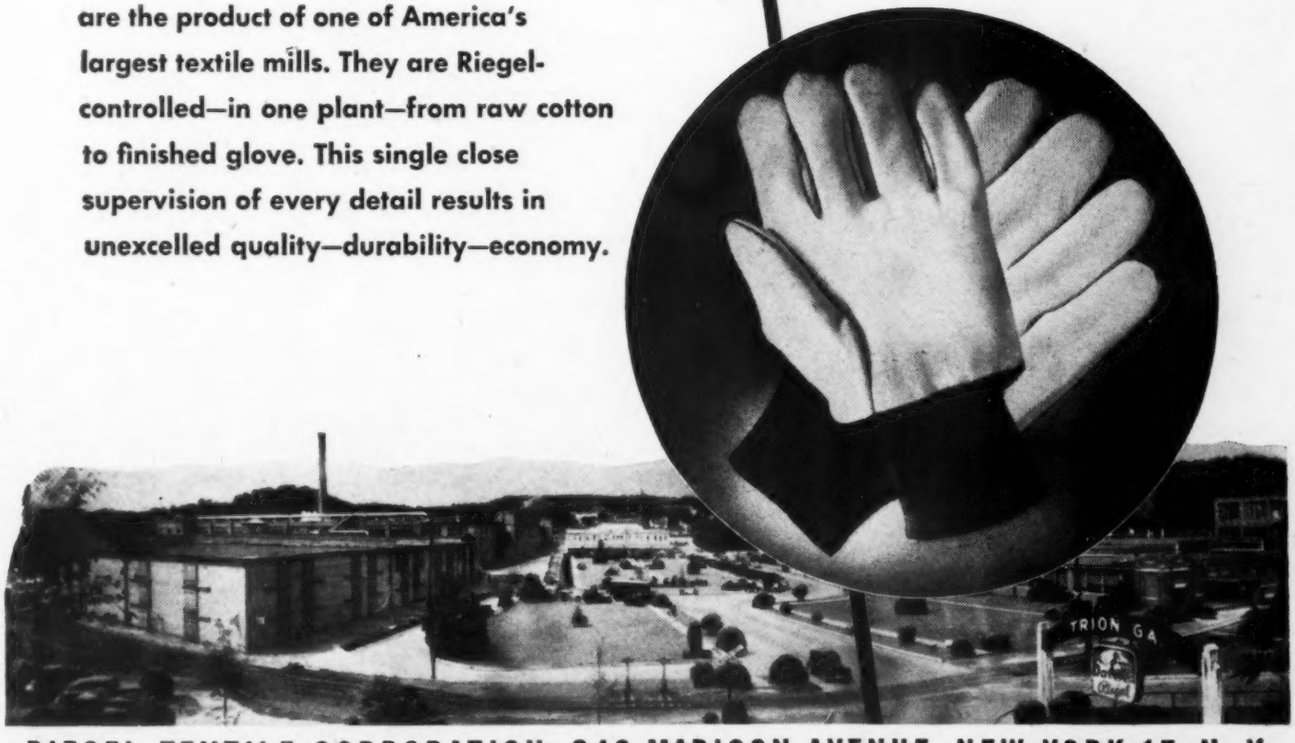
(*Turn to page 266*)

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These strong protective, work gloves are the product of one of America's largest textile mills. They are Riegel-controlled—in one plant—from raw cotton to finished glove. This single close supervision of every detail results in unexcelled quality—durability—economy.



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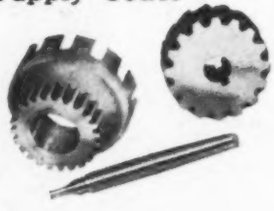


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ALJIAN GUEST OF LOUISVILLE ASSOCIATION

The Purchasing Agents Association of Louisville was host to George W. Aljian, National President, on Tuesday, October 8th, the meeting having been moved up a week to accommodate Mr. Aljian's schedule. Mr. Aljian pointed out in his talk that conditions in Purchasing departments were changing rapidly and that some time during 1947, purchasing agents might again see a buyers' market. He summed up his talk in the following thought: "Don't buy unless you have to, and if you do buy, buy discriminatingly."

Professor Charles W. Williams of the University of Louisville reported that he had found New York stock market experts blue and bearish on a recent trip to the East. He said that the feeling is that the market drop reflects an anticipated shake-down in the business index.

Twenty-two members of the Louisville Association attended the Southeastern Purchasing Conference at Birmingham. Four new members were formally introduced at the meeting, namely: Carl A. Robison, Kosmosdale Portland Cement Co.; Victor H. Baldwin, Bernheim Distilling Co.; C. P. Simpson, Hart Manufacturing Co., and Charles M. Long, Stratton & Terstegge.

AUTOMOTIVE PROCUREMENT BUFFALO MEETING

Fred Lord, Director of purchases, Kaiser - Frazer Corporation, Detroit, Mich., spoke on "Automotive Procurement Problems" at the Executive Night meeting of the Purchasing Agents Association of Buffalo, at the Hotel Statler, October 9th.

PAPER DISCUSSED AT TWIN CITY MEETING

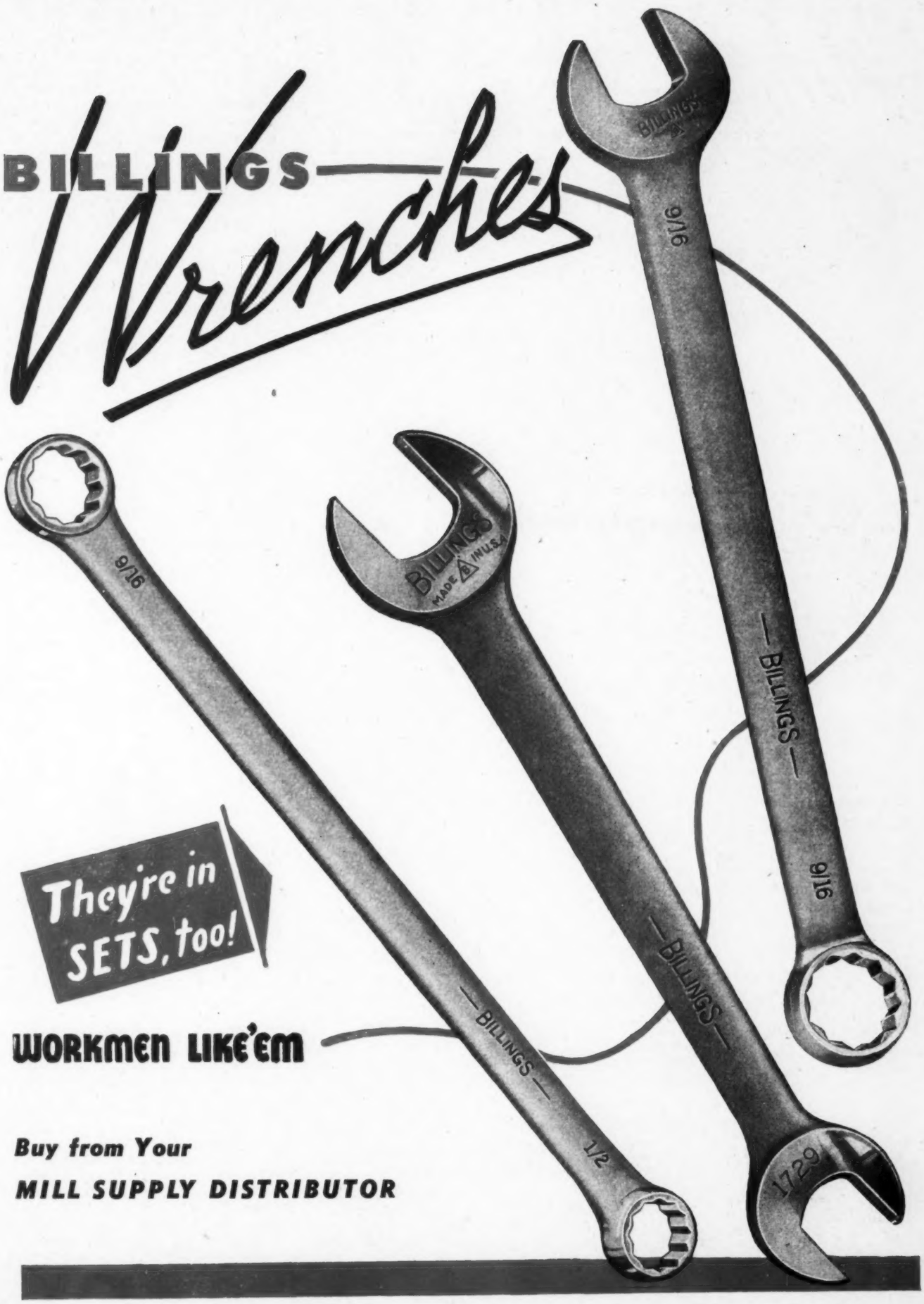
J. P. Tyrrell, sales manager of the Northwest Paper Company spoke on "Paper" at the October 9th meeting of the Twin City Association of Purchasing Agents, at the Minneapolis Athletic Club.

HOUSTON ASSOCIATION MARKS 25TH ANNIVERSARY

The Purchasing Agents Association of Houston, Tex., observed its 25th birthday with a silver anniversary party on October 17th, in a program honoring the charter members. Ira C. Jared, vice president of District No. 2, N.A.P.A., purchasing agent, Sun Oil Co., Dallas, was special speaker for the evening. Thirteen new members were voted into the association, and five membership transfers were approved at the association's September 10th meeting. On October 3rd, the association held a golf tournament and barbecue at the Goldcrest Country Club. Sam H. Harper, first vice president of the association is

(Continued on page 268)

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The Hand Label Embosser (above), Hand-operated Model BB (left)

ROOVERS

(*Continued from page 266*)

chairman of the association's Community Chest Drive Division, with J. B. Thompson, second vice president as vice chairman.

MILWAUKEE ASSOCIATION LISTS TWENTY-SIX COMMITTEES

Following is Committee Roster of the Purchasing Agents Association of Milwaukee, with names of chairmen, for the 1946-47 association year:

Educational, Joseph W. Nicholson, City of Milwaukee;

Entertainment, Kenneth E. Groth, Stolper Steel Products Corporation;

Employment and Welfare, Edwin L. Janke, Jos. T. Ryerson & Sons, Inc.;

Program, Forest S. Perkins, Globe Steel Tubes;

Membership, Oscar M. Bonesho, Hummel Downing Company;

Publicity, Raymond W. Brick, Carnation Co., Oconomowoc, Wis.;

Exchange Bureau, Clifford H. Dawley, Ampco Metal, Inc.

Legislative, William E. Becker, Young Radiator Co.;

Music, Fred W. Radke, Smith Engineering Works;

Constitution & By-Laws, Theron C. Child, Allen Bradley Co.;

Attendance and Reception, Karl F. Kattner, The Oilgear Company;

Public Relations, Emil H. Jones, E. R. Wagner Mfg. Co.;

Commodity Group and Special Subjects, Frederic G. Syburg, Chain Belt Co.;

Non-Ferrous Metals, Frank F. Steffen, Nordberg Mfg. Co.;

Chemicals and Paints, Frank Schockmel, Patek Brothers, Inc.;

Alloy and Carbon Steels, Charles W. Berger, Allis Chalmers Mfg. Co.;

Castings (all types), Harold J. Jungbluth, The Oilgear Company;

Coal, Arthur G. Bruens, Milwaukee Solvay Coke Co.;

Office Supplies & Equipment, George H. Schumacher, Siekert & Baum Stationery Co.;

Petroleum Products, Richard E. Zimmer, Cities Service Oil Co.;

Traffic, Oscar M. Bonesho, Hummel Downing Co.;

Paper, Edmund R. Sutherland, Thilmany Pulp & Paper Co.;

Pig Iron & Scrap, Loy M. Sanford, Motor Castings Co.;

Pipe & Fittings, Charles J. Petersen, Rundle Spence Mfg. Co.;

New Products Developments, Charles B. Johnson, Chain Belt Company,

Lumber, Charles B. Johnson, Chain Belt Co.

POSTWAR PURCHASING PITTSBURGH MEETING

R. L. VanCleve, General Purchasing Agent, Carnegie-Illinois Steel Corporation, spoke on "Postwar Purchasing" at the October 15th meeting of the Purchasing Agents Association of Pittsburgh, held at the Hotel William Penn.

"CARBON BLACK TREASURE" ST. LOUIS MEETING

A. W. Wolff of the National Carbon Company presented that company's Kodochrome color sound film "Carbon Black Treasure" at the October 22nd meeting of the Purchasing Agents Association of St. Louis.

At this meeting a "Commodity Discussion" under the direction of D. M. Baker, Commodity Committee chairman, was inaugurated. Another interesting presentation was a "Know Your Member Company" talk by Walter H. Jansen of the Fairbanks, Morse Company, Westco-Pomona Pump Division.

PRESIDENT ALJIAN VISITS SIXTH DISTRICT ASSOCIATIONS

President George W. Aljian of the National Association, and Sixth District Vice President Ralph Keefer, were guest speakers at meetings of Sixth District associations as follows:

Cleveland, October 28;
Toledo, October 29th;
Cincinnati, October 30th;
Springfield, October 31st;
Canton, November 1st.

The itinerary concluded with two-day fall meeting of the executive committee of the National Association at Pittsburgh, on November 2nd and 3rd. Saturday evening, November 2nd, the members of the executive committee were guests at special party sponsored by the Pittsburgh association. Members of the Northwestern Pennsylvania association joined in this dinner meeting.

SURPLUS PROPERTY DISPOSAL

R. D. Wibor, Jr., Regional Director, W. A. A., Tulsa, Okla, was guest speaker at the October 9th meeting of the Purchasing Agents Association of Tulsa, Okla., at the Chamber of Commerce. He spoke on "Activities of WAA in Disposal of Surplus Property."

"HOW BIG IS OUR JOB?" ALJIAN AT NEW YORK

"How Big is Our Job" was the subject of address by President George W. Aljian of the N.A.P.A., at the National Night meeting of the Purchasing Agents Association of New York, at Builders Exchange Club, October 22nd. Other guest speakers were Vice President James A. Cooney of the Eighth District, and Secretary George A. Renard of the National.

The Forum meeting previous to the dinner meeting was on the subject of containers, with Edgar A. Rumple of Merck & Co., Rahway, N. J., presiding. The speakers and their subjects were:

Harold A. Bergstrom, Chief Chemist, The Container Company, Fibre Drums;

Robert Campbell, V. P., Rheem Mfg. Co., Metal Drums;

Donald S. Frye, Secretary, Textile Bag Mfrs. Assn., Burlap Bags;

Fred S. Hinkle, Sales Manager, Benj. C. Betner Co., Heat-Sealed Bags.

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LONG LASTING, ALL-PURPOSE GRINDING WHEELS

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COOLANT SYSTEMS FOR WET GRINDING

DUST COLLECTORS FOR DRY GRINDING

SOLUBLE CUTTING OILS

Whether it's a fine precision surface grinder or any of the accessories for surface grinders, all are available at DoALL. No need to get these from various individual sources when it's so easy to have a DoALL factory-trained engineer check your complete surface grinding requirements. • It's a real revelation to see a DoALL Grinder at work—the last word in producing superfine surface finishes plus high precision in flatness, parallelism and size. • DoALL Selectrons quickly demagnetize electro-magnetic chucks—permitting fast removal of work; no waste of time; no scratching of work. DoALL Coolant and Dust Collecting Systems for wet or dry grinding are designed for long, trouble-free service. Send for Surface Grinder circular today.

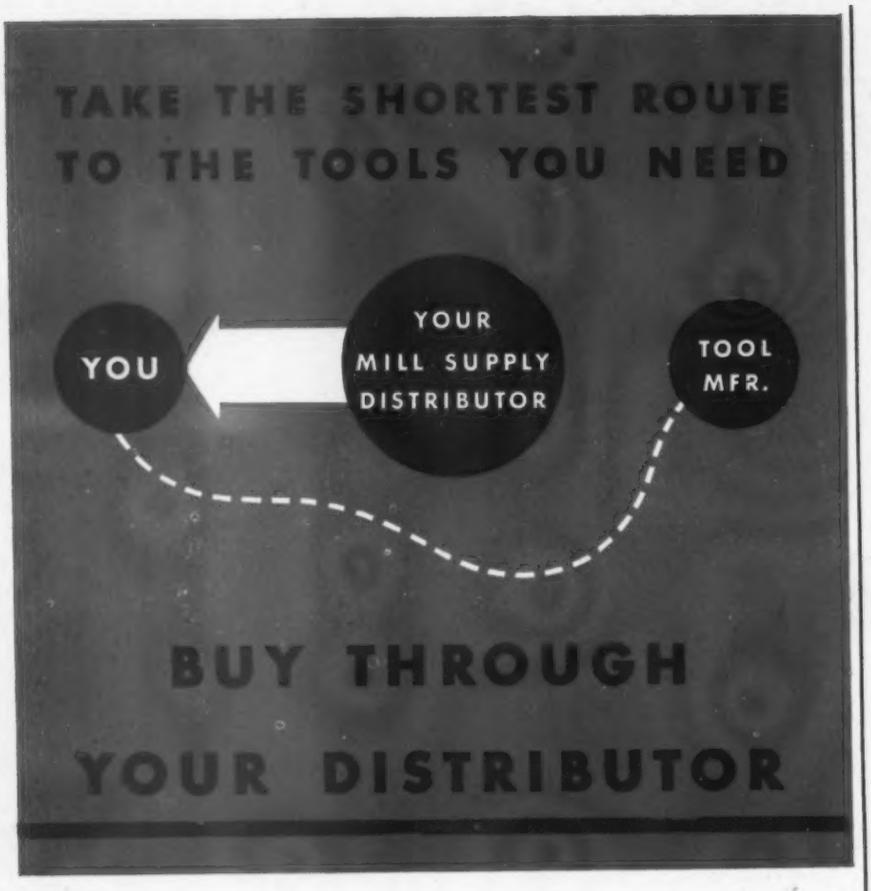
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World's Greatest Toolmakers

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PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK
HACKSAWS • BAND SAWS FOR CUTTING METAL, WOOD, PLASTICS

COMMODITY PRICES BACK TO NORMAL WITHIN YEAR

Though commodity prices are likely to continue high for a short while, they should be well on their way to normal levels within a year, "now that the fog of our bureaucratic controls is lifting", declared Ody H. Lamborn, president of the National Association of Commodity Exchanges & Allied Trades, Inc., of New York, at the October meeting of the Purchasing Agents of Cleveland, at the Hotel Cleveland, in that city. Price decontrol now under way, he said, will return our economy to a workable system. He emphasized that no country is big enough to lick the law of supply and demand, declaring that the American public has already paid a heavy price for a "planned" economic system, and that it would have to be patient until the resultant damage has been overcome. He also warned that the sugar shortage may continue for some time because of the heavy shipments to foreign nations. Mr. Lamborn declared that business must get behind an intelligent, factual program of public relations to correct the widespread misinformation on the true factors behind our present living standards.

INSTALL NEW OFFICERS AT DETROIT

The September meeting of the Purchasing Agents Association of Detroit was largely given over to the installation of new officers: President, Philip Norman, Michigan Tool Co.; First vice president, Marshall Pease, Jr., Detroit Edison Co.; Second vice president, W. Edward Vokes, Goddard & Goddard Co.; Treasurer, Arthur Newton, Kelsey-Hayes Wheel Co. T. J. Donnelly, Detroit Steel Products Co. is national director. L. G. Auberlin, Stephenson Building, is executive secretary.

BUFFALO ASSOCIATION WELCOMES SIX NEW MEMBERS

Six new members were welcomed into the Purchasing Agents Association of Buffalo, at the October 9th meeting of that body held in the Hotel Statler, Buffalo. The new members are: Arthur J. Carey, Rupp Equipment Co.; William G. Carter, Robert S. Handy, R. Thomas McClive, and Clarence W. Heyser—all of the National Gypsum Company, and Leslie C. Thellemann, Kencroft Malleable Company, Inc.

Speaker of the evening was L. S. McKay, chief purchasing agent of the Kaiser-Frazer Corporation. Mr. McKay compared the speed and efficiency with which the corporation was formed and gone into production, with that achieved by the shipbuilding business. Although the types of material and equipment may differ, he declared that the purchasing problems encountered are much the same. Despite strikes, material shortages and other handicaps, the company is now producing 100 cars a day, one year after possession of the Willow Run plant, and production is steadily increasing.

(*Turn to page* 272)

Keep gasket costs down

SPECIFY THESE STANDARDIZED MATERIALS

Save compounding costs—and production time, too—by ordering Armstrong's standardized sealing materials. Five basic types, available in 71 different formulations, help avoid expensive, to-order compounding and costly delays.

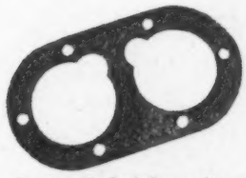
Armstrong's wide-range line provides a planned range of properties that can satisfy almost any gasketing specification. These materials are performance-proved in a wide variety of specialized applications. Consult an Armstrong representative for unbiased recommendations backed by our 34 years of experience and gasketing research. Or write today to Armstrong Cork Company, Gaskets and Packings Department, 7211 Arch Street, Lancaster, Pennsylvania.



Armstrong's Synthetic Rubbers
19 precisely compounded materials. Available molded, die-cut, in sheets or tapes.



Armstrong's Rag Felt Papers
2 types. Dry or impregnated. Can be die-cut to specifications. Also available in sheets, rolls, strips, tapes, and laminations.



Armstrong's Cork Compositions
28 different materials offer a choice of densities, degrees of compressibility, and other properties.



Armstrong's Fiber Sheet Packings
3 types. No. 841, tough, resilient fibrated leather. No. 143, non-corrosive. No. 1242, low-cost, general-purpose sheet packing.



Armstrong's Cork-and-Synthetic Rubbers
19 compositions offering varying degrees of true compressibility combined with properties of the synthetic rubbers.

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Wherever high-grade, smooth, bright, polished surface wire, free from cracks, checks, or die marks is required, XLO is your answer. Gauges all the way from .003" (38,026 ft. to lb.) up to .200" (9 ft. to lb.). Diversified, indeed, are the uses for XLO MUSIC WIRE. For example: Mechanical Springs in endless varieties, Antenna Rods, Butter, Bisquit, Cake, Brick Cutters, Choke, Cookie Cutters, Control, Conveyor Belts, Dental Instruments, Fish Leaders, Flexible Shafts, Mandrels, Perforating Punches, Sewer Rods, Sizing Gauges, Ski Binders, Spark Gap Gauges, Tonsil Snares, Trolling Lines, Vibrating Screens, Wire Forms.



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No matter where you are, it's mighty important to keep dry. Sawyer's "FROG Brand" oilskins have protected sailors against the weather for over 100 years. Now Sawyer's new rubberized "LIGHTHOUSE Brand" garments assure you of modern protection against the elements. They are rubberized-rugged to withstand rough, tough going, in any climate, in any weather. They are powerfully built to withstand snagging, tearing, chafing.



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PANHANDLE ASSOCIATION HOLDS DINNER-DANCE

The Purchasing Agents Association of the Texas Panhandle entertained members and friends at a dinner-dance October 11th at the Mexican Inn, Amarillo, Texas. The next regular meeting of the association will be held November 13th.

PRESERVING AMERICAN ENTERPRISES NORTHWESTERN P. A. MEETING

U. A. McAllister, assistant to the president of the Erie Railroad, was feature speaker at the October 10th meeting of the Purchasing Agents Association of Northwestern Pennsylvania, held at the Arlington Hotel, Oil City, Pa. His subject was "How to Sell Enough Goods and Services to Preserve Three Million American Enterprises." Mr. McAllister held that high production and absence of depressions could best be realized by a good job of selling, made possible by an intensified sales training program. In the course of his talk he declared that any sale should be made at a profit to both seller and buyer; that a cut price was a small gain to the buyer when compared to the damage done to the business of the nation collectively.

A paper on "Steel" was read by W. J. Scott of the Wolfs Head Oil Refining Company, Oil City. E. C. Walker, Kendall Refining Co., Bradford, Pa., reporting on the Sixth District Council meeting held in Cincinnati on September 21, stated that considerable progress had been made on consideration of Educational Program, Pension Plan for NAPA employees, and the appointment of members to the American Arbitration Board.

LARGE ATTENDANCE GREETS ALJIAN AT BALTIMORE

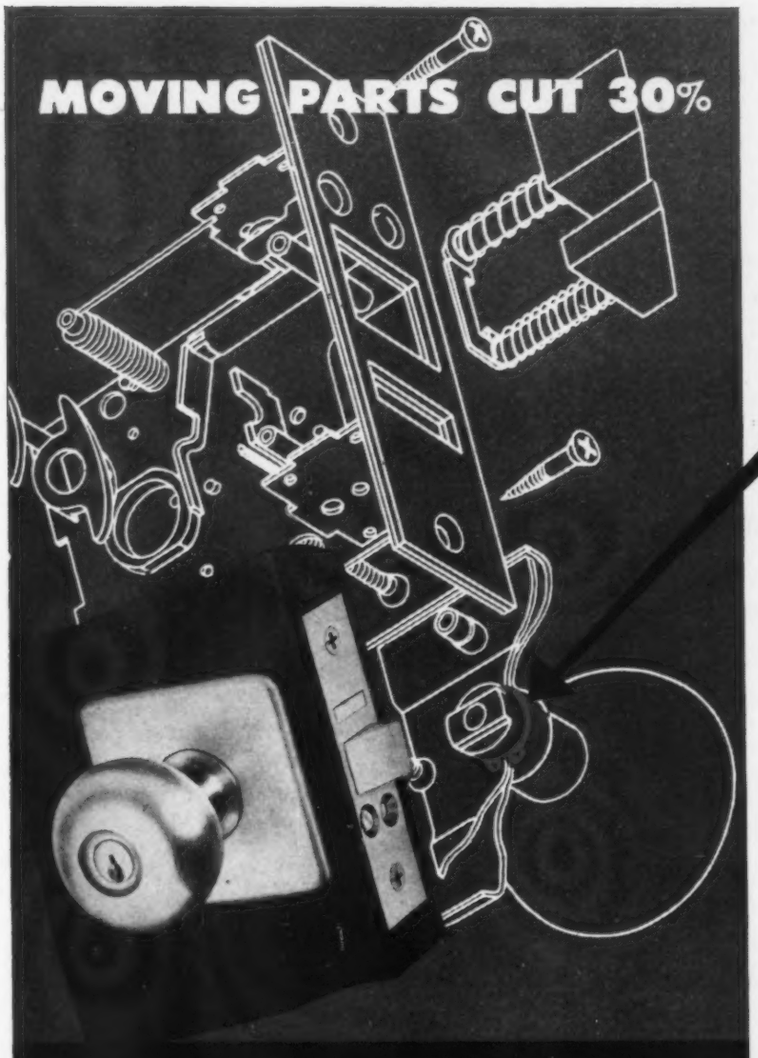
Approximately 200 persons attended the joint National Night Meeting of the Baltimore and Washington, D. C. associations of Purchasing Agents, at the Lord Baltimore Hotel, Baltimore, Md., October 25th, at which President George W. Aljian, Vice President James Cooney, Eighth District, and Secretary George Renard of the N.A.P.A. were guest speakers. The attendance included a large number of state and city officials, in addition to members of the Baltimore association, and the Men's Division and Women's Division of the Washington Association.

"STEEL, MAN'S SERVANT" MOVIE AT FORT WORTH

"Steel, Man's Servant", a moving picture of particular interest, was presented by C. E. McClelland, United States Steel Corporation, at the October 15 dinner meeting of the Purchasing Agents Association of Fort Worth, at the Worth Hotel.

(*Turn to page* 274)

TRUARC helps Sargent produce superior lock at lower cost!



The new Sargent Integralock: the first completely engineered, precision cylinder lock in which all parts, knobs excepted, are for the first time made of high-strength, pressure-formed metals instead of castings.



U. S. PAT. RE. 18,144

"TRUARC HELPED MAKE THIS LOCK POSSIBLE" says Sargent & Company, New Haven, Conn., leading lock manufacturers for 74 years.

IN DESIGN: "Waldes Truarc Retaining Rings permit closer tolerances; result in more compact design; provide full circumferential bearing at vital points; help to make possible a 30% reduction in moving parts."

IN PRODUCTION: "Truarc reduces machining operations, cuts assembly time, helps eliminate the grub screw hitherto universally deemed essential."

IN SERVICE: "Truarc maintains accurate, unvarying relationship of parts, simplifies disassembly and reassembly, reduces possibility of damage in making repairs."

IN COSTS: "The many advantages provided by Truarc have contributed to the great economies that enable us to produce this finer-lock at a new low cost for a quality product."

Whatever your product, whether old and basic, or a comparative newcomer, there's a Waldes Truarc Retaining Ring that will make it simpler, more economical to make and repair. For Truarc, with its never-failing grip and patented design assuring constant circularity, gives you a new approach, a superior solution to fastening problems. Send us your drawings; Truarc engineers will be glad to show how Truarc can help you.

Send for booklet containing interesting engineering data.





WALDES

TRUARC

RETAINING RINGS

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Waldes Kohinoor, Inc., 30H
47-10 Austel Place
Long Island City 1, N. Y.

Please send Booklet on Truarc Retaining Rings to

Name & Title_____

Firm_____

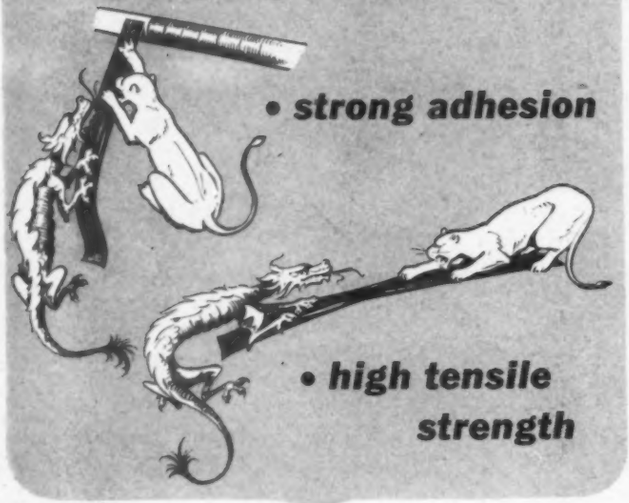
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City_____ Zone____ State_____

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STAY WORKABLE LONGER!

they're tapes that always give you...





and high dielectric strength

When a tape buyer gets PANTHER or DRAGON, he's sure of good-working qualities . . . qualities that comply with, and in many points exceed, current A.S.T.M. and government specifications.

PANTHER and DRAGON Friction and Rubber Tapes adhere securely, have high dielectric and tensile strength, make for neater, surer and longer-lasting splicing jobs. PANTHER and DRAGON Rubber Tapes have the additional quality of fusing securely.

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All PANTHER and DRAGON Tapes are sold only through recognized wholesalers.

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friction & rubber TAPES
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Wilkes-Barre, Pennsylvania • Offices in Principal Cities

"SUPPLY AND DEMAND" MEMPHIS MEETING

Prof. C. S. Brown, Memphis State College, discussed the broad subject of "Demand and Supply and Postwar Markets" at the October dinner meeting of the Purchasing Agents Association of Memphis, at the Hotel Gayoso, Memphis, Tenn. His talk was followed by a round table discussion of the general subject lead by Vice President Martin Sunderland. C. E. Barron, purchasing agent, E. H. Clarke & Brothers, was duly welcomed as a new member.

EIGHT ACTIVE MEMBERS ADDED TO BRITISH COLUMBIA ROSTER

Applications of eight active members, and three associate members were approved at the October meeting of the Purchasing Agents of British Columbia, at the Hotel Vancouver, Vancouver, B. C. The new members are: J. H. Davies, Commonwealth Construction Co. Ltd.; R. K. Greene, The Vancouver Daily Sun; G. M. Lindsay, Sidney Roofing & Paper Co. Ltd.; W. M. Penny, The City of Vancouver; P. H. Triance, Northern Construction Co. and J. W. Stewart Ltd.; J. Whitby, Industrial Engineering Ltd.; H. A. Winters, Vancouver Motors Ltd.; R. Palmer, Paragon Supplies Ltd.; Associate members: W. O. Bromley, B. C. Sugar Refinery Ltd.; G. E. Harrison, Vancouver Supply Co. Ltd., and E. J. Topp, the Vancouver General Hospital.

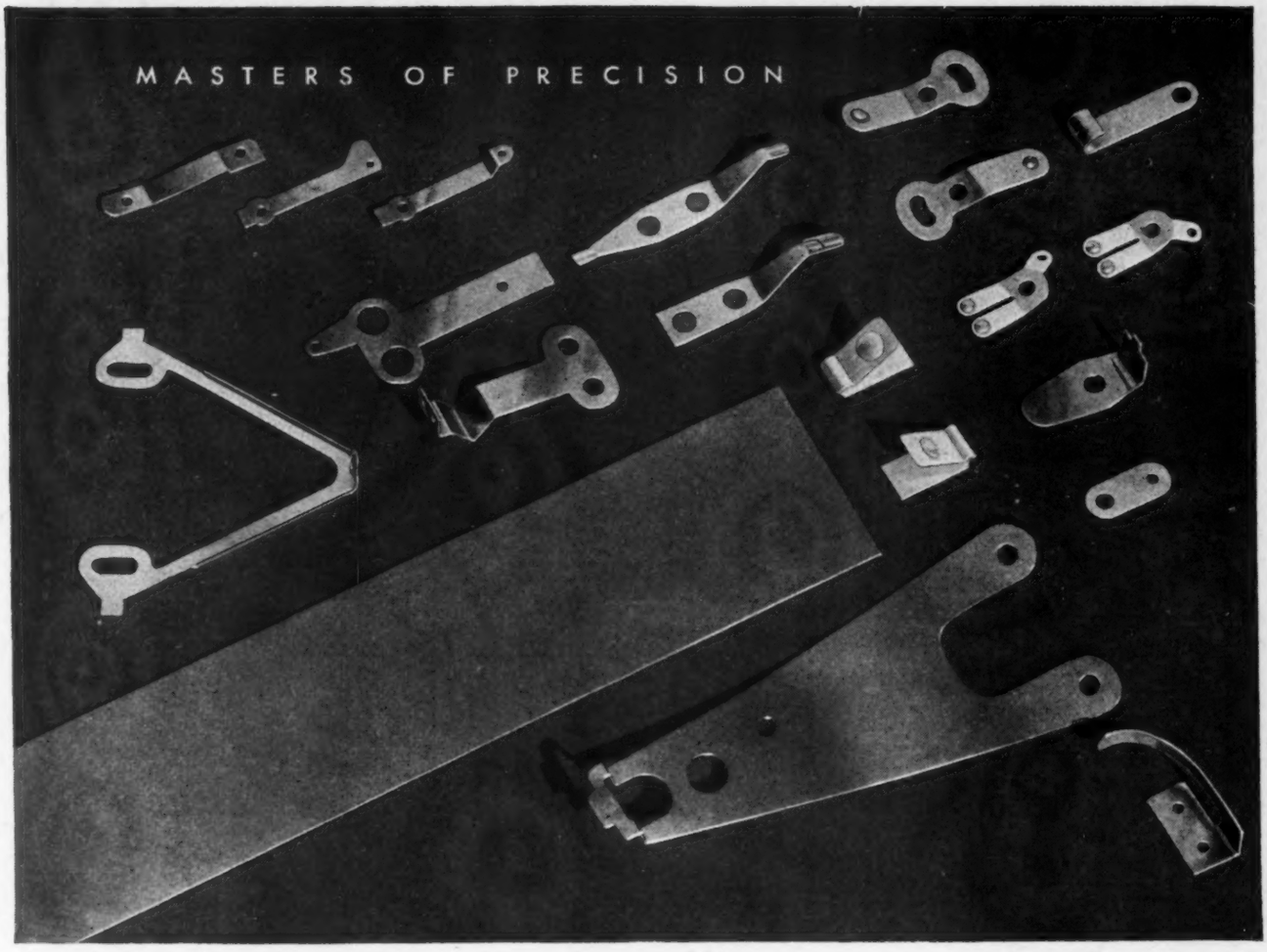
Guest speaker for the evening was Halford D. Wilson, former commander of the Kreiz Freisland sector of occupied Germany, who spoke on "Present Day Control and Conditions within Germany." October 24th, members visited the British Ropes Canadian Factory Ltd., and the plant of the Pacific Bolt Manufacturing Company.

MATERIALS HANDLING EXPOSITION TO BE HELD IN CLEVELAND

The first exposition to deal entirely with industry's material handling problem, a phase of industry which represents approximately one quarter of all costs, is scheduled to be held at the Public Auditorium, Cleveland, O., January 14th through the 17th. "Materials handling is one of the last frontiers for cost reduction, according to Earl I. Burke, Republic Steel Company manager of shipping, who is chairman of the policy committee of the First National Materials handling Exposition. "Reliable estimates place the cost of handling alone at five billion dollars annually. It is expensive and non-productive. In no other phase of manufacturing do there exist such possible savings in costs as in materials handling.

A four-day program of prepared papers and discussions will be held concurrent-

(*Continued on page 276*)



Western Metals Have *It*

One of the world's most successful manufacturers of control instruments requires a great variety of springs. Each, of course, must be uniform and precise in its functioning.

After many rigid tests, this manufacturer selected Western Super-X phosphor bronze and nickel silver to insure faithful functioning of his instruments.

These metals are especially treated to incorporate extraordinary ductility in combination with excellent spring properties.

Western Mills at East Alton, Ill., and New Haven, Conn., are strategically located to supply users of copper-base alloys. We will welcome your inquiry regarding "tailor-made" metals.

Super-X PHOSPHOR BRONZE WESTERN BRASS MILLS

WESTERN BRASS MILLS

DIVISION OF OLIN INDUSTRIES, INC.

East Alton, Illinois

DIVISION OF OLIN INDUSTRIES INC.

BRASS • BRONZE • PHOSPHOR BRONZE • NICKEL SILVER • COPPER

This is the Point to look for . . . . .



Pats. Pend. Pat'd &

It's Self-locking!

Regardless of the most chattering vibration this "Unbrako" Socket Set Screw will not budge. It's *knurled point digs in—and holds tight.* Yet, this screw can easily be backed out, and used over and over again. Millions upon millions in use.

In sizes from #4 to 1½" in diameter—full range of lengths. Write for "Unbrako" Catalog.

"Unbrako" and "Hallowell" products are sold entirely through distributors.



You can't screw socket screws in or out without a socket hex wrench, — so why not get our #25 or #50 "Hallowell" Key Kit which contains most all hex bits.

Knurling of Socket Screws originated with "Unbrako" in 1934.

UNBRAKO

Reg. U. S. Pat. Off.

OVER 43 YEARS IN BUSINESS

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A Reliable Gauge to lower production costs in your plants

Because OUR engineers know YOUR production problems, they make it their business to rebuild machine tools economically to meet the standards required for accuracy, service and efficient operation. Botwinik quality also extends to the vast quantity of used machines constantly in stock. And our New Machine Tool Department, representing leading new machine tool manufacturers, also makes available a valuable service to all industry.



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(*Continued from page* 274)

ly with the exposition. Edwin J. Heimer, president, Barrett-Cravens Co., Chicago, is chairman of the exposition committee. Ezra W. Clark, vice president and general manager, Clark Tructractor division of Clark Equipment Co., Battle Creek, Mich., is chairman of the program committee. Serving with Mr. Burke on the policy committee are T. O. English, assistant chief purchasing agent, Aluminum Co. of America, Pittsburgh; and, Col. Albert B. Drake, materials handling engineer of Drake, Stevenson, Sheahan, Barclay, Inc., New York.

POST 1947 WEEKLY WALL CALENDAR NOW AVAILABLE

The Frederick Post Company, P. O. Box 803, Chicago, Ill. announces availabilty of the traditional Post 1947 Cata-



Typical page post wall calendar

log Calendar. Calendar consists of 52 weekly sheets, 12" x 20", spiral bound, with engineering data and full 12-months calendar on the back. Copy is yours for the asking.

SELF SEALING ENVELOPE LICENSE AVAILABLE

American citizens now can obtain a license to manufacture an improved self-sealing envelope which has several advantages over other envelopes of this type.

Alien Property Custodian James E. Markham announces that a patent, seized from enemy nationals, covering this self-sealing envelope is available on a royalty-free, non-exclusive basis for the remaining life of the patent. An administrative fee of $15.00 is charged for the license, he added.

When an envelope is made under this patent, Mr. Markham explained, the flaps remain open until sealed and do not tend to close of their own accord, thus facilitating handling prior to sealing. Printed indentations at the base of the flap make folding easy. Also, Mr. Markham said, the adhesive, which does

(*Continued on page* 278)

WEATHER
Clear with diminishing costs.

TINNERMAN NEWS EXTRA

CLEVELAND, NOVEMBER, 1946

76TH YEAR OF TINNERMAN PROGRESS

76TH YEAR OF TINNERMAN PROGRESS

BUYERS GET HOT TIP

MASS PRODUCTION OF NEW SERIES SPEED NUTS RESPONSIBLE FOR LOWEST PRICES IN HISTORY

Buyers Determine Savings by Checking Present Purchases of Threaded Nuts and Lock Washers

It is a simple matter to determine the savings made in the assembly of any product by converting to C7000 Series Speed Nuts.

Buyers are simply tailing up the number of threaded nuts and lock washers used daily on machine screws and sheet metal screws. For example, one manufacturer using 14,000 threaded nuts and lock washers per day found that the total cost of these exceeded $ million annually. Changing to Speed Nuts not only saved this amount but, by reducing spring-tension Speed Nut, converted it into a substantial figure. In addition to saving on each thousand, converting to Speed Nuts also gave the advantage of time saving. Speed Nuts are applied by reduced weight, it lowered portation charges and it the old problem of loosening.

Then too, in many a space is limited. A Speed be applied where the small to apply threaded lock washers without

Even if the C7000 Series cost more than threaded lock washers, they would Nut with their lower savings are still greater product using machine sheet metal screws in any ten most popular sizes.

The C7000 Series Speed are accurately heat treated gives a rust resisting finish screw with a firm grip. Low is fully prevented because spring steel nut absorbs the tion, which causes loosening conventional threaded nuts.

Billions of Speed Nuts have proved their work on hundreds than a decade. The time to is now. Every day's delay is in savings, otherwise effected.

NEW SPEED NUTS HAVE RUST-RESISTING FINISH

The corroding and rusting of ordinary threaded nuts presents a serious problem in connection with servicing and replacing parts, as nuts must be [illegible] Having no

SPEED NUTS ELIMINATE LOCK WASHERS

With the use of C7000 Speed Nuts, the lock washer necessary and obsolete. The power of the lock washer supply a spring-tension the threaded nut and the part. With the spring incorporated in the Speed tion which eliminates one part is necessary, thus two. Only one part to one part to handle. In this, the Speed Nut affords spring-tension that can cured with a lock washer tight over the nut. And Speed Nuts never chiseled or sawed off new nut for replacement. There's no expensive nut damage, when Speed sion resiliency prevents ing parts to such a degree porcelain enamel, glass or might crack or chip.

Speed Nuts are also insurance against damage in transit. Your products are subject to severe vibration and shock while being packed, handled and shipped. Speed Nuts provide a resiliency that cushions and protects porcelain enamel and glass assemblies against damage.

Eliminating a lock washer not only cuts the number of parts in half but it also cuts the work in half. The Speed Nut also has a wider bearing surface. That feature also prevents distortion of the panel or part to which the nut holds.

When you cut down the amount of buying you reduce stocking problems and handling problems. You save on transportation charges and you have a nut that does a more satisfactory holding job.

Shrewd, alert, cost-conscious John Buyer, speaking today for American Industry, admitted wide affect of latest Tinnerman Announcement. He predicted that, "The new C7000 Series Speed Nuts, costing less than threaded nuts plus lock washers, will save hundreds of thousands of dollars, as well as give impetus to better and faster assembly of mass production products". From Cleveland comes word that large stocks are on hand for immediate delivery. Prices and samples of the new Speed Nuts can be had for the asking.

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Speed Nuts are *self-locking*, for their unique spring action provides a positive lock that prevents vibration loosening. Thus, the use of separate lock washers is completely eliminated. You save the cost of the washers and the time it takes to handle and install

The *wide bearing surface* of the Speed Nut spreads the fastening load over a much greater area than does an ordinary threaded nut. Therefore, the use of separate spanner washers is unnecessary. Here again there's a saving in cost and assembly time.

Speed Nuts may be used on porcelain enamel, glass or plastic assemblies *without danger of breakage*. They provide the spring tension necessary for tight assembly, yet are sufficiently resilient to prevent damage due to expansion and contraction, vibration or shock.

Greater Strength is Result of 20 Years of Engineering Experience

Back of the C7000 Series is all the experience of the Tinnerman factories and their extensive engineering development departments. For more than 20 years the Tinnerman organization has devoted itself to studying and solving assembly problems. No other organization has a comparable record of engineering development in this field.

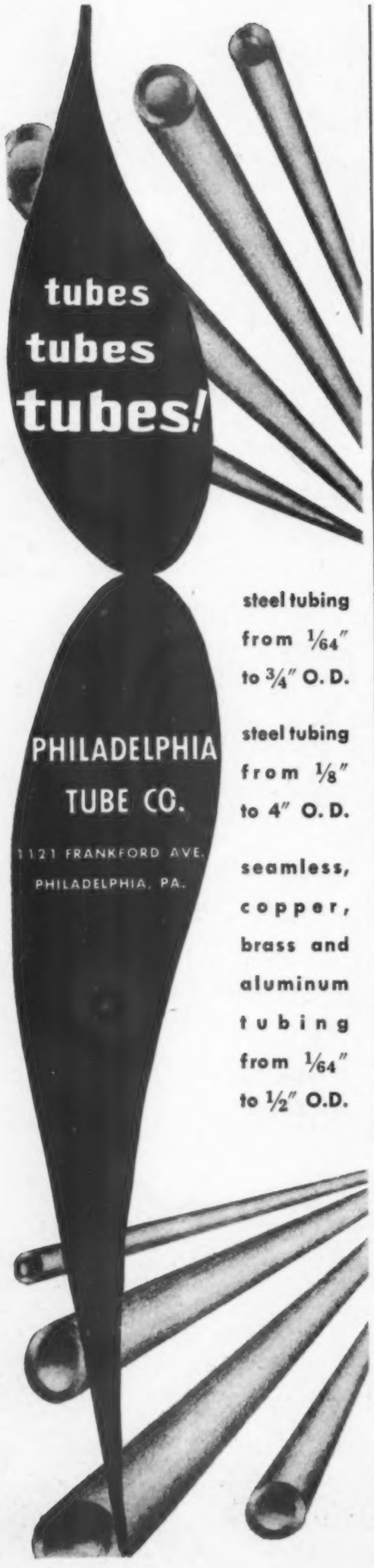


Speed Nuts

PATENTED

FASTEST THING IN FASTENINGS

TINNERMAN PRODUCTS, INC. • 2050 FULTON ROAD • CLEVELAND 13, OHIO



(*Continued from page* 276)

not adhere to the uncoated surfaces, is applied in a pattern providing channels for escape of air that would ordinarily be caught in the sealing process and cause bulges or creases.

Complete licensing information may be obtained from the Patent Use and Development Section, Office of Alien Property Custodian, Washington 25, D. C. A copy of the patent—No. 2,014,-914—may be obtained only from the Commissioner of Patents, Washington 25, D. C., for 25 cents.

PORTABLE ELECTRIC RADIATOR NO WATER OR STEAM

Illustration shows portable electric radiator, known as the Co-Z-Air, developed by Henry J. Morton Associates, Inc., Detroit, Mich. Models include two wattage ranges—800 and 1320 watts,



5-Section 2600 BTU Co-Z-Air portable electric radiator which uses 800 watts at 120 volts, ac or dc.

available in 5, and 8 section types. They may be plugged into any 110 to 120 volt ac or dc outlet, and deliver 2600 and 4300 btu, respectively. Units are fitted with carrying handle. Elements are completely enclosed. No water or steam is used. Cold air is drawn off the floor, passed through the radiator and circulated into the room through concealed vents in each radiator section. Unit is said to heat rapidly, though it never reaches a temperature that would cause burning.

CARD REFERENCE IN ERROR IN NORTHROP ARTICLE

W. C. Rockwell, Commercial Research Department, Tabulating Machines Division, Remington, Rand Inc., New York, calls attention to erroneous reference to punch cards, in the "well represented and informative" article by Fred M. Burt in the September issue of *Purchasing*, titled "How Northrop Aircraft Buys."

One instance, he advises, occurs on page 122 where IBM is used in the caption describing the punched card which is an identified Remington Rand card. The other reference is on page 124, column 1, and he writes, "Since we have a large installation of machines at Northrop we assume this reference should have mentioned Remington Rand instead of IBM."

We regret the error, and thank Mr. Rockwell for calling it to our attention.

SALESMEN TENDER FAREWELL LUNCHEON TO PURCHASING AGENT

To be singled out as a purchasing executive to whom a group of salesmen tendered a farewell luncheon and presentation, is the distinction accorded J. M. Johnston, assistant purchasing agent of Canadian Liquid Air Co. Ltd., Montreal, says the *Canadian Purchaser*. The occasion was his leaving to enter into partnership with his brother in Northern Ireland. At the luncheon in the vice-regal suite of the Ritz-Carlton Hotel, a handsome cellarette was presented to Jack Johnston "by his friends and business associates in recognition of the excellent relations which had been developed over a period of about 10 years". A sewing cabinet was sent to Mrs. Johnston. Chairman of the meeting, comprising about twenty friends, was Tim Conoley of Dawson Bros. Ltd. The presentation was made on behalf of those present by Harold Groom, purchasing agent of Canadian Liquid Air and an active member of the Purchasing Agents Association of Montreal.

NEW ALUNDUM ABRASIVE

The September issue of "Grids and Grinds", house organ of the Norton Company, Worcester 6, Mass., is devoted to "32 Alundum Abrasive", a new product of research developments, and tells of the advantages of wheels thereof, which have a definitely faster and cooler cutting action, longer life, and require fewer dressings. The text tells of their merits in surface and internal grinding, as an outstanding abrasive for tool room grinding, and their qualities that make



Photomicrograph of typical grains of new 32-Alundum Abrasive, showing sharp, nubbly surface and strong blocky shape.

for longer life and faster cutting action in foundry operations and on portable grinders.

A special electric furnace process de-

(*Continued on page* 280)

YOU'VE EVERYTHING TO GAIN BY GETTING IN TOUCH WITH *Accurate* FOR THE SPRINGS YOU NEED



Ask us to make your springs for you. Find out for yourself that we're pleasant people to do business with . . . that we make your springs exactly the way you want them . . . and that—here at Accurate — you receive intelligent cooperation, quality workmanship and on-time deliveries.

If you need engineering help, you'll discover that our engineers can quickly help you determine the right spring for your job. Perhaps our engineers can improve your product's performance through proper spring application. You *can't* lose.

WRITE FOR THE ACCURATE HANDBOOK ON SPRINGS

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Springs — *Accurate Springs* — *Wire Forms • Stampings*

MILFORD
PROFILE SAW
for all contour sawing, jig and band saw machines



EDGE HARDENED
Teeth as hard as a hack saw blade—long endurance.

TOUGH AND FLEXIBLE — Made from electric furnace saw steel—side wear reduced to a minimum.
MILLED TEETH — Uniformly sharp for fast cutting.
PRECISION SET—Will follow a straight or contour sawing line accurately.

•

Backed by the "know-how" of saw specialists since 1876.

•

Order from your Mill Supply Distributor. He is always ready to serve your needs for all factory and mill supplies, as well as Milford hack saw and band saw blades.

The MILFORD PROFILE dispenser box was designed to insure maximum strength. The corners are supported by wooden blocks which prevents any crushing or binding. No binding wires are used. Simply run out, measure and cut desired length. Done in a jiffy. Saves hands and guards coil against corrosion. All boxes plainly labeled.



MILFORD
PROFILE AND BAND SAW BLADES
RESISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.
Saw Specialists Exclusively for Over 65 Years
NEW HAVEN 5, CONNECTICUT, U. S. A.

(*Continued from page* 278)

veloped for making 32-Alundum abrasive forms individual, chunky, nubbly shape individual crystals of commercial grain size which do not require crushing, the crystals being screened into standard train sizes. The crystals are characterized by many plane surfaces which form both exterior and reentrant dihedral angles, the latter making definite rake angles which increase the cutting efficiency of the grains. The chunky shape of the grains, plus more uniform bonding due to their high purity, gives long wheel life and freedom from frequent dressings.

ELECTRIC PREHEATER

Illustration shows the Calesco Preheater, new development in infra-red heating where applications require thermoswitch-controlled low temperatures, with a minimum plus or minus variance up to 380 degrees. Maker states it has been proved adaptable to a wide variety



The Calesco Preheater

of uses, such as preheating plastic preforms, dehydrating industrial materials, drying paints and metal finishes, and preheating popcorn in consumer vending machines. Unit is open on all sides to allow released moisture to be dissipated. Drawers are separately removable from two sides. An Infra-Lectric plate consisting of aluminum-carbon alloy elements fused into tempered glass forms the bed of the drawer, allowing all-over even plate temperatures. Materials may be placed above or below plate or rest directly on the surface. Units are manufactured by Delt-Calesco Co., Far Hills, N. J.

PLASTICS FOR AUTOMOTIVE GLAZING OTHER THAN WINDSHIELDS

Broadening of American Standards Association code requirements covering automotive safety glass to facilitate the use of plastics for motor vehicle glazing installations other than windshields has been recommended by the Society of Automotive Engineers, New York. The Society's recommendations were developed by the SAE Plastics Glazing Committee, which has reported that varied and exhaustive tests lead to the conclusion that, with the approval of state legislative and administrative agencies, synthetic plastic materials may be used, either singly or laminated, for motor vehicle windows. In advising against the use of plastic windshields, the report ex-

(*Continued on page* 284)

STOP VIBRATION and PREVENT RUST



For a few cents and a few minutes production time, you can buy many dollars worth of customer satisfaction.

WITCO VIBRATION DAMPENER

—formulated to the specifications and requirements of automotive engineers

Witco Vibration Dampening Mastics are bituminous materials made for trowel or spray application to automobile doors, deck lids, roof and side panels, fenders, floors and other underbody parts.

A single coating lasts the lifetime of the car, meeting rigid requirements for adhesion as well as slumping, drying and stability. Witco Vibration Dampeners air-dry in a few hours, and may be baked at temperatures up to 275 F. Formulated for high-speed production.

Vibration dampening properties of these materials indicate that ½ pound per sq ft is adequate to eliminate tinny noises and road roar. Witco Mastics form a protective coating which is unaffected by water, salt spray, calcium chloride, or other road chemicals. It is highly resistant to the abrasive action of sand and gravel.

, Witco Vibration Dampeners are available in various specifications to meet automotive requirements. Technical data will be furnished on request.

WITCO

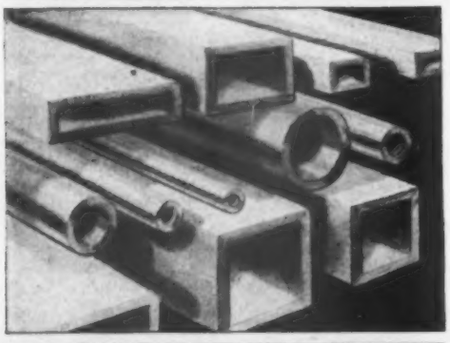
WITCO CHEMICAL COMPANY

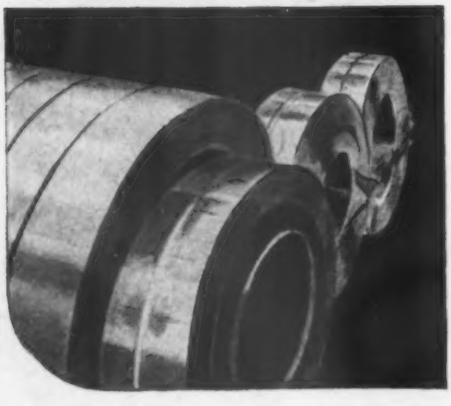
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Brass Mill Products Quickly!







A large supply of brass mill products is now offered to the trade at unusually low prices. The entire inventory may be fabricated by normal production methods and is being sold in production quantities.

The inventory includes: Free Turning Brass Rod—1 inch diameter and larger; Copper and Brass Tubing—3 inch O.D. and larger; Naval Brass Rod—various diameters; Aluminum Bronze, Manganese Bronze and Silicon Bronze in various shapes.

• • •

This material is offered in the following sequence as provided by law: (1) Certified Veterans of World War II; (2) Subsequent priority claimants; (3) Non-priority purchasers. Federal agencies have had opportunity to fulfill their needs. VETERANS OF WORLD WAR II should apply to their nearest WAA Regional Office for certification; the case number assigned and the location of the certifying office must be stated in a Veteran's offer to purchase.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

WAR ASSETS ADMINISTRATION

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

GOVERNMENT OWNED SURPLUS

157-8A



CLEVELAND
Top Quality
FASTENERS

The Cleveland Cap Screw Company

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

Warehouses: Chicago and Philadelphia

Ask your Jobber for Cleveland Fasteners

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

BATES•GRATES

for better open steel flooring and stair treads



The glow from the open furnace door below the grating illustrates the maximum light, ventilation and the ease of maintenance that goes with BATES • GRATES. Then normal cleaning routine keeps the floor in new-floor condition—clean and safe.



Up the stairs or along the walkways, BATES • GRATES are safer, stronger and more durable.

THESE are the features you want in open steel flooring and stair treads: Strength, safety, ease of maintenance, durability, good underfloor lighting and maximum ventilation.

You get all six to the limit when you install BATES • GRATES. The simple directness of BATES • GRATES engineering—with Hex cross bars fillet-welded to main bars—makes this possible.

You don't pay for BATES • GRATES quality . . . it pays you.



(*Continued from page* 280)

plains that no plastic materials currently available satisfactorily withstand the abrasive abuse to which windshields customarily are subjected, and recommends the continued installation of laminated safety glass.

5 KW MAGNETRON

New magnetron, furnishing 5 kw of continuous power output and designed for use as a c-w oscillator, is announced by Tube Division of General Electric Company's Electronics Department at Schenectady. Operating at 1050 megacycles, the new tube is expected to prove useful in many heating applications in-



GE 5 kw magnetron

asmuch as it will permit heating in a cavity or enclosure constructed with good electrical conducting walls. Designed with all-metal construction, it has a range of efficiency from 60-65 per cent at maximum power output. Cathode terminals and water connections may be turned in any direction. The anode is water-cooled; cathode is a pure tungsten filament.

SKILSAW BUYS PNEUMATIC TOOL FIRM

Skilsaw, Inc., Chicago manufacturer of portable electric tools, announces the purchase of the Forss Pneumatic Tool Company of Aurora, Illinois, makers of a general line of small, portable pneumatic tools. The Forss Pneumatic Tool Company was founded in 1943 by F. P. Forss, who for 37 years was identified with the Independent Pneumatic Tool Co. of Chicago, and his son, John. Both will remain with the Skilsaw organization, and will be in charge of manufacturing operations at the Aurora plant.

NEW FPHA PUBLICATION "PUBLIC HOUSING DESIGN"

A decade's experience in the design and construction of low rent housing developments is summarized in "Public Housing Design," a new publication just released by the Federal Public Housing Authority.

Appearing when more large scale private developments are being undertaken than ever before, the 300-page volume is expected to be of interest to many commercial home builders. It covers the entire scope of community development from preliminary surveys through planning and actual construction to final landscaping around the new homes.

Among the subjects discussed are the general considerations of project design; site selection; planning and engineering; buildings; service structures; materials; dwelling types and plans; community utilities; mechanical and electrical design; lawns and planting.

Photographs, diagrams and charts are used profusely to illustrate the text. An index of nearly 500 subjects makes the volume useful as a handbook for reference and study.

"Public Housing Design" was produced by the FPHA's Development and Reutilization Branch headed by William P. Seavor, assistant Commissioner. Gilbert L. Rodier, director of the FPHA Technical Division, was in charge of preparing the report.

Copies of "Public Housing Design" may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C., for $1.25 each.

SURPLUS BIBLES AVAILABLE WITHOUT COST

Approximately one million surplus bibles are available free of charge to religious, educational, eleemosynary and similar institutions, according to joint announcement by the War Assets Administration and the Office of Chief of Chaplains, United States Army. Most of the volumes are pocket-size. Some are the King James version, some the Douay version, while others are a version prepared for men of the Jewish faith.

HANDLING CARBON TETRACHLORIDE SAFETY FOLDER

Information on the safe use of carbon tetrachloride is available in folder issued by Safety Research Institute, 420 Lexington Avenue, New York 17, N. Y. The folder entitled "How to Use Carbon Tetrachloride Safely" gives information on the proper handling and storage of this solvent and directions for first aid in case of accident. Single copies are available upon request. Prices on quantities will be quoted.

SILICONE OIL SPEEDS PRODUCTION OF MOLDED MICA PARTS

Faster and improved production of molded mica parts has been reported by the General Electric Company, Pittsfield, Mass., with the utilization of its own silicone oil as a mold release agent.

Engineers revealed that silicone oil is being used as a lubricant in molding both shellac and Glyptal bonded mica and report that the application results in a freedom from carbon and other decomposition products which adversely affect the electrical properties of the mica. They also disclosed a marked reduction in rejected pieces caused when parts were

(*Continued on page* 286)

None of these Customer worries when you sell the NOMA ELECTRIC ROOM HEATER

Heater Fires Girl's Robe

[redacted], six, was burned severely about the body yesterday morning when her bathrobe caught fire from an electric heater in her home, [redacted] Street. She was given first aid by Patrolmen Thomas Kane and Charles Browne and removed to [redacted], 70 Convent Avenue, where her condition was said to be serious. The child's father, [redacted], forty-seven, was treated at the hospital for burns on his hands, received as he tore the flaming robe from his daughter's body.

Reprinted from the N. Y. Herald Tribune



3 Durable Colors: Brown wrinkle, smooth Ivory and Taupe finishes.

for NOMA is absolutely *safe*—for children, pets and invalids—parents, home owners and apartment dwellers—

Check your own stock *now* against the outstanding selling features that make NOMA the leading heater in volume sales and customer satisfaction:



CONVENIENCE — The NOMA heater is conveniently portable, plugs into any outlet.



EFFICIENCY — Delivers thorough comfort. Not just a spot heater, NOMA carries warmth to every corner of the room — 100% efficient — all electricity is converted into *useful* heat.



SAFETY — Baby-safe and pet-proof The heat's in the room, not in the metal! Guarded switch. FIN TUBE element fully enclosed in a sturdy metal cabinet... no glowing wires—no fire hazard.



DURABILITY — NOMA's spot-welded construction provides lifetime durability. Nothing to wear out, lasts indefinitely without servicing to maintain your reputation for quality sales.

For complete information and name of your nearest distributor, write or wire NOMA today.

Specifications

NOMA "A3" HEATER...Length 22", Height 8½", Width 6", 115 and 220 Volts, 1000 Watts, AC or DC, Weight 20 lbs.
NOMA "A4" HEATER...Length 22", Height 8½", Width 6", 115 and 220 Volts, 1320 Watts, AC or DC, Weight 20 lbs.

Handy as a Quick-Dryer, too

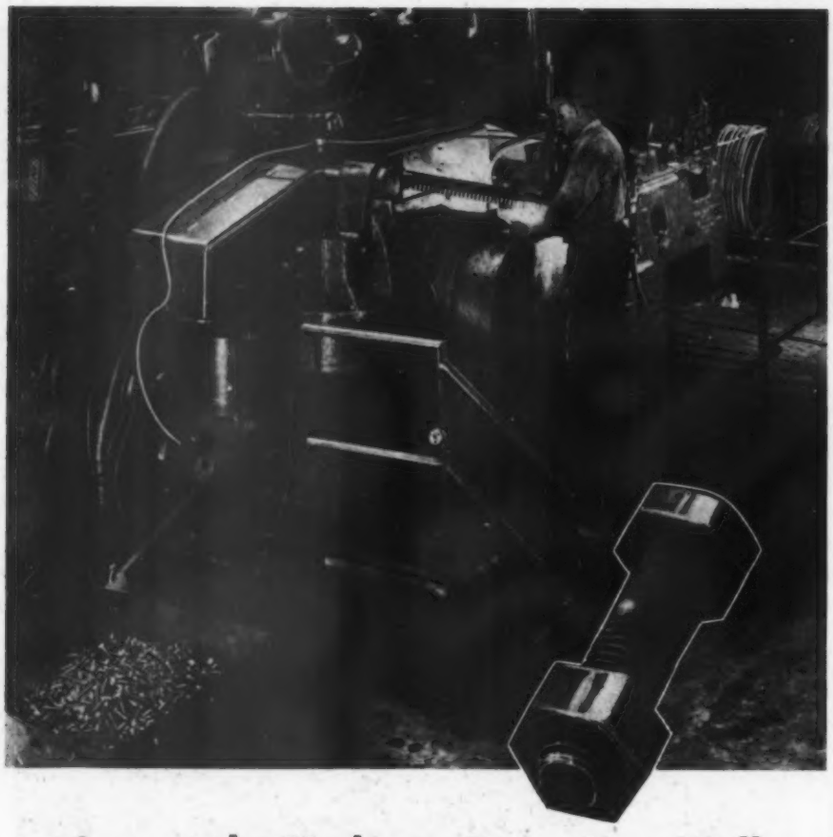
NOMA has no dust-catching fans or moving parts, so it dries hair and personal wash items really *clean*. Extra-length plug-in cord (8 ft.) lets you move the NOMA heater around where you want it.



UL

Fintube Element THE HEART OF THE HEATER

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BOLTS, NUTS, RIVETS, CAP SCREWS

Better fits, faster threading-on, tighter joints, are assured by the accuracy of Oliver Industrial Fasteners. Above is shown one unit of a battery of modern bolt-making machines used in the production of Oliver bolts. Amazing accuracy and uniformity are here achieved with the advantages of cold-forming and mass-production.

Ordinarily the cost of installing and assembling an industrial fastener in a machine or fabricated structure is many times the cost of the fastener itself. Therefore, you want the best fasteners you can get. The greater dimensional accuracy, cleaner threads, well-formed heads and bodies of Oliver products are reflected in faster assembly and appreciable cost savings for you. When you specify OLIVER, you are sure of getting the best!

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OLIVER IRON AND STEEL Corporation

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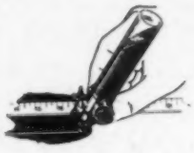
(*Continued from page* 284)

broken in being removed from the mold. This feature of the silicone oil plus the fact that its use saves time formerly spent in cleaning gummy decomposition products from the mold has resulted in greater production of the finished mica parts, they said.

The high temperature stability of silicone oil together with its low surface tension enables the mold operator to apply the silicone oil readily to all sections of the mold while still heated, engineers reported.

PAINTERS' STRIPING TOOL

Illustration shows painters' striping tool, product of The Wendell Manufacturing Co., 4234 N. Lincoln Ave., Chicago, Ill. Maker states that it makes striping as easy as using a pencil.



The glass paint fountain is slightly larger than fountain pen barrel, and maker states that wheel-tip assembly is designed to handle even flow of paint without leakage or flooding. Wheel tips are easily cleaned, though maker states they are designed to sell at such low cost that they may be replaced as "casually as dull safety razor blades." Wheel tip widths come in sizes, 1/64" to 1/8".

SOLUBLE CUTTING OIL

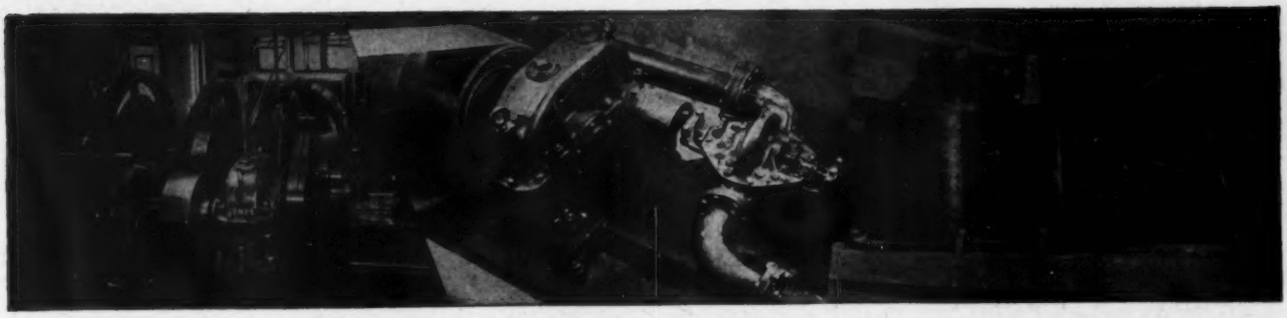
A cutting oil, known as Texaco Soluble Oil Heavy Duty, has been developed by The Texas Company. It is said to have the excellent cooling properties of soluble oils combined with the high speed cutting characteristics of sulfurized mineral oils, permitting much higher cutting speeds.

CHANGE NAME TO STRONGHOLD SCREW PRODUCTS

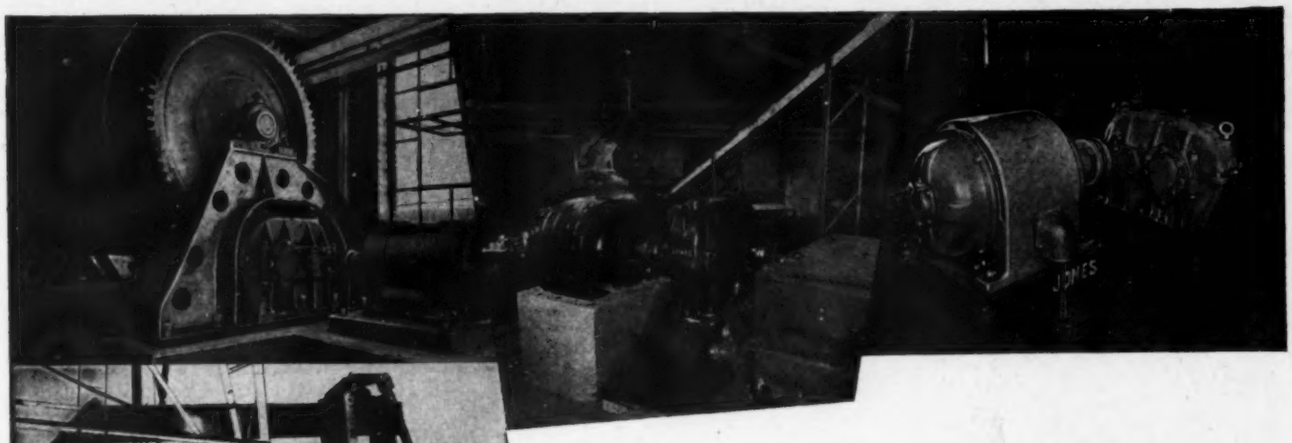
Stronghold Screw Products Inc. is the new tradestyle of Manufacturers Screw Products of 216 Hubbard Street, Chicago, makers of the Stronghold line of fasteners. Regular items include standard machine screws, bolts and sheet metal screws and "specials", plus Phillips Heads, Seams, nuts, washers, cotter pins and lock-washers.

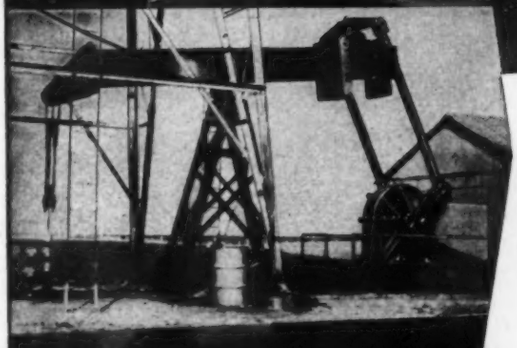
MATERIALS STANDARD FOR SAFETY APPAREL

Commercial Standard CS129-46, Materials for Safety Wearing Apparel, is announced by the Division of Trade Standards, Washington, D. C. Copies are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 5¢ per copy.



JONES DRIVES FOR INDUSTRY







• These illustrations show application of Jones drives to solve a wide range of industrial power transmission problems.

★ For many years the W. A. Jones Foundry & Machine Company has been called upon as a consultant, to help solve a great variety of difficult drives involving the use of speed reducers, gears and other transmission machinery. In many cases these installations have called for the development of special equipment, designed and built to suit the specific requirements of the project.

As a result of these years of experience, involving numerous special problems in the mechanical transmission of power, the Jones organization has collected a vast amount of technical data relating to work in various fields.

Specific bulletins and catalogs are available on the products listed below and a general 20 page bulletin "Jones Drives for Industry" presents a broad picture of Jones products, engineering services and manufacturing facilities.

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WHITLOCK CORDAGE COMPANY
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NAMED EXECUTIVE SECRETARY OF FELT ASSOCIATION

Herbert S. Blake, Jr., president of the Organization Service Corporation, has been appointed executive secretary of the Felt Association, Inc. Simultaneously the headquarters of the Association have been moved to 74 Trinity Place, New York 6, N. Y. Mr. Blake, a member of the Bar of the State of New York, has devoted his entire career to trade association activities.

PRECISION CASTING

Advantages of precision casting in the handling of materials difficult to machine or forge are told in bulletin No. 19B 6451, just released by the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., which now employs two individual methods in this process — namely, the "lost wax" and a plaster molding process.

The bulletin points out that every type of metal can be cast except magnesium alloys. Tolerances can be held from .003 to .008 per inch — plus or minus — depending upon form, mass and quantity. Shown are a variety of typical plaster precision castings of intricate design, actual machining of which was either completely eliminated or reduced to a minimum. Castings of up to 15 inches in one dimension and up to 20 pounds total weight are feasible.

TO SCRAP SHIPS FOR IRON AND STEEL SCRAP

Approximately 280 ships will be available for scrapping and will provide about 700,000 tons of sorely needed iron and steel scrap for the country's steel mills, the Civilian Adminstration reports. This scrapping operation is the first step of a ship-breaking plan which may ultimately swallow up a total of 1280 ships which have outlived their usefulness. Of the first 280 ships to be scrapped, 200 are owned by the Maritime Commission and 80 are Navy ships. Of the additional ships, many will be old ships turned in as trade-ins by private firms.

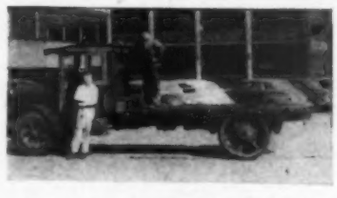
Citing the critical need for scrap, Edward Greb, CPA Salvage Director, reported that more than 24 of the steel industry's open hearth furnaces are shut down because of the lack of sufficient scrap. Many additional furnaces will be down, he predicted, unless the scrap shortage is relieved promptly.

The 700,000 tons estimated salvage from the 280 ships is admittedly but a small beginning in getting more scrap to the steel mills, CPA officials said.

However, the plan for scrapping 1280 ships, and the recently announced Government drive to obtain scrap from other federal agencies, as well as from industry and farms, is expected to yield sufficient scrap to place the steel mills in a reasonably sound position over the next 12 months. More than 2,000,000 tons of scrap per month must be obtained to keep the mills operating at the current rate of 90 per cent, CPA said.

A LESSON IN SALVAGE

When the C. L. Gougler Machine Company of Kent, Ohio took over the old Mason Tire & Rubber Company property of that city back in 1943, it found on the property an old abandoned, 1919 White truck. The vehicle was buried to the axles in mud and otherwise covered up with a great mass of growing weeds. In short, it had long since been relegated to the rubbish pile, and nothing in the picture suggested that life was anything but extinct.



This is the rejuvenated 1919 Model abandoned truck

Mechanics of the C. L. Gougler Machine Company unearthed the old vehicle and towed it away to the garage where half a day was spent cleaning it up. Then, with the mud removed, the fuel lines cleaned, and a bit of gas in the tank, one of the mechanics plied the crank. Directly there was a roar, and

(*Continued on page 292*)



Welded Stainless Tubing

4" to 14¾" O.D.

Uniformity in roundness and in quality of welding characterizes Pittsburgh Piping Welded Stainless Tubing. Available in most stainless alloys, in sizes 4" O.D. to 14¾" O.D., and in wall thicknesses ranging from 7/64" to ½". Write for data sheet.

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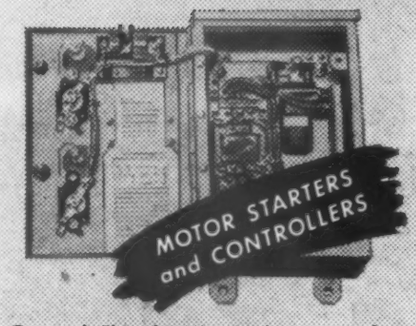
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General Electric, Westinghouse, Cutler-Hammer, Ward Leonard and other makes, built to both commercial and Navy specifications. 115 and 230 volt DC; 220 and 440 volt AC; 60 cycle, 3 phase. Drip-proof, water-proof, manual and magnetic types. Unused and used.



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Composition and rubber in a variety of grips. Fine quality.





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Bakelite and composition, parallel slots, "T" slots, rugged construction.



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Fuse, non-fuse—2 and 3 pole—single and double throw.







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All types, for all purposes.

The electrical supply items shown here are but a fraction of the total surplus inventory. Use the coupon to indicate other items in which you are interested.

A huge inventory of government surplus electrical supplies is now available to dealers, jobbers, contractors and industrial users. Many scarce items are included in this sale—items which continue to be in short supply and are now offered at prices well below today's market for similar products.

***Act Now*—secure needed supplies and build up depleted stocks. Simply fill in the attached coupon and mail to your nearest War Assets Administration Regional Office.**

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691-3

All electrical supplies are subject to priorities. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

WAR ASSETS ADMINISTRATION

GOVERNMENT OWNED SURPLUS

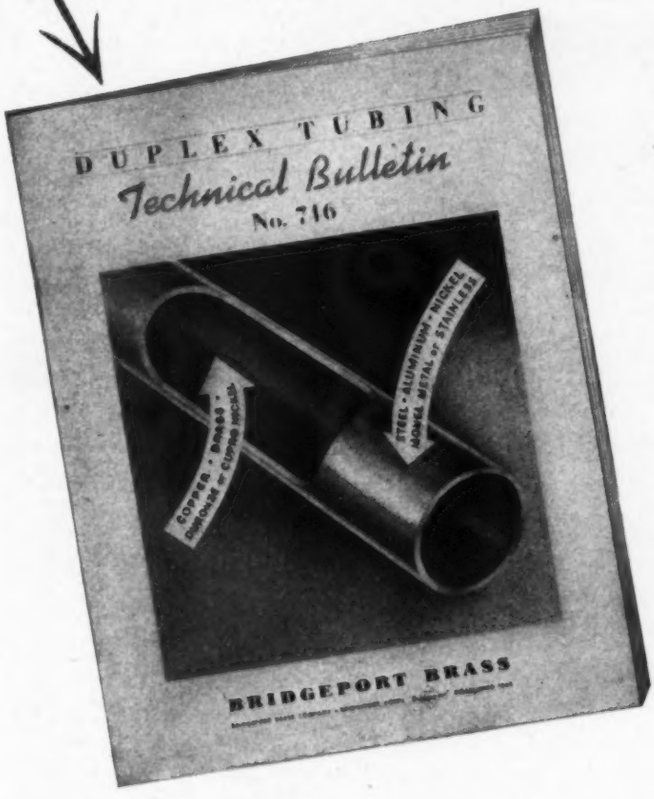
Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Tulsa

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COMBATING DOUBLE CORROSION...

Send for Revised Technical Bulletin on

BRIDGEPORT DUPLEX TUBING



Just published—this revised edition of Bridgeport's Technical Bulletin on Duplex Tubing contains up-to-the-minute data on applications, advantages, recommendations and methods of installation.

This new bulletin will prove extremely helpful to users of heat exchangers, condensers, evaporators, stills and other chemical and industrial processing equipment where both inside and outside tube walls are attacked simultaneously by different corrosive elements too severe for a single alloy or metal. It explains how Duplex Tubing resists double corrosion through the use of inner and outer tubes of different metals or alloys—each selected to combat a specific corrosive element—and mechanically combined so as not to interfere with heat transfer properties.

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Write today for new Duplex Tubing Technical Bulletin No. 746 and assistance in solving your present corrosion problems. **U. S. Pat. No. 2093380*

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THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

HOLO-KROME
fibro forged
INTERNAL SOCKET SCREWS WRENCHING

(*Continued from page* 288)

the old truck was back on the running list.

Following this initial demonstration, the mechanics went to work in earnest on the 25-year old vehicle, with the result that it was soon assigned to full and regular service. Today, three years after rising from its abandoned state, the veteran carrier is working in the toughest kind of service — hauling machinery — and asking no quarter.

Since the 1919 truck was returned to service in 1943, there has been no overhauling work or repair work called for, and no new parts have had to be purchased. The old original solid tire equipment continues in use.

OPA REGULATIONS

Leathers: Three additional leathers have been given price increases, namely, 35% for leather re-tanned in this country from semi-tanned East Indian goatskin; 34% for chamois leather produced from imported raw sheepskins or imported raw lambskins; 3½ cents a square foot for skivers tanned from imported untanned skivers or imported pickled sheepskin skivers—this amounts to about 25%. Amend. 1 to Order 16 under MPR 61.

Spruce—Pine: A ceiling price increase of $4 per thousand board feet for Eastern spruce and $1 per thousand board feet for Northeastern white pine, Jack pine, Norway pine (except Ottawa Valley white and Norway pine) and Eastern hemlock, was announced by OPA. Amend. 4 to Third RMPR 219.

Kapok: Domestic ceilings established for kapok, imported vegetable fiber used in mattresses, upholstery and the like, on a cost-plus-mark-up basis. Order of Revocation to RPS No. 59.

Reinforcing bars: Producers' ceiling prices for fabricated concrete reinforcing bars have been raised about $2.50 per ton by increasing the permissible extras for bending and engineering. Increases are 15 cents per hundred pounds for both light and heavy bending and 10 cents per hundred pounds for engineering. Fabricators may charge published trucking rates when delivery is made entirely by truck. Amend. 2 to RMPR 159.

Woodworking Machinery: To encourage production of woodworking and timber working machinery and equipment, OPA has raised the 10 per cent interim increase granted producers May 29, 1946, to 16 percent, effective September 27. Amend 2 to Order 636 RMPR 136.

Rosin: Suspension of price control over gum and wood rosin of all grades, was announced by OPA. Suspension applies also to products containing 50% or more by weight of the rosins suspended. Amend. 52 to Sup. Order 129.

BUY BONDS AND KEEP THEM

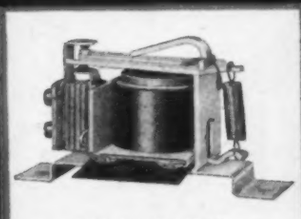
GUARDIAN RELAYS FOR EVERY CONTROL NEED



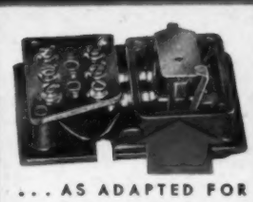
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The Republic Radiant Gas Burner, product of Autogas Company—Chicago, is designed to produce "Gradient-Heet" control in place of the usual intermittent On and Off operation. To accomplish this, a bi-metal thermostat containing two sets of contacts is wired in series with a Guardian 120 Relay. When both sets of contacts are closed, a maximum flow of gas passes thru the control unit. As room temperature rises a fractional degree, the thermostatic bi-metal blade opens one set of contacts, deenergizes the Guardian 120 Relay holding coil. This action opens a pilot valve, permits a portion of input gas to be routed to a regulating chamber and automatically diminishes the flow of fuel to the burner. Should the room temperature continue to increase, the second set of thermostatic contacts opens up to close the input gas supply completely. However, should the room temperature decrease at this intermediate point, the Guardian 120 Relay closes the pilot valve to allow a maximum flow of gas to the burner. In this application, Guardian's standard Series 120 Relay has been quickly converted to a "special" unit for better performance, price, and delivery. Whatever your control need, Guardian is ready with a Relay, Switch, Solenoid, Magnetic Contactor or complete control assembly.

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GUARDIAN'S SERIES 120 RELAY

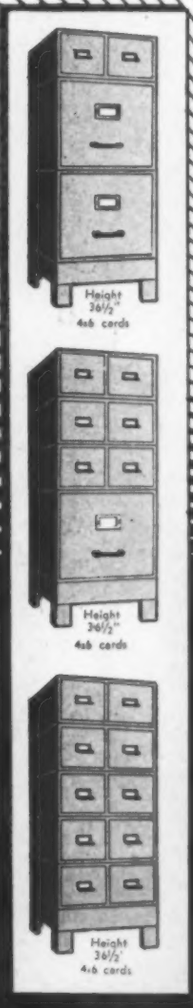


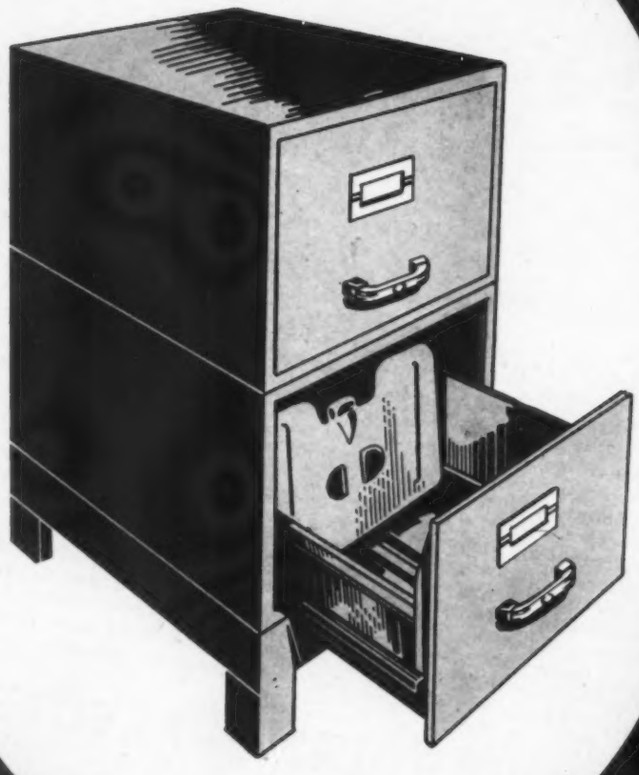
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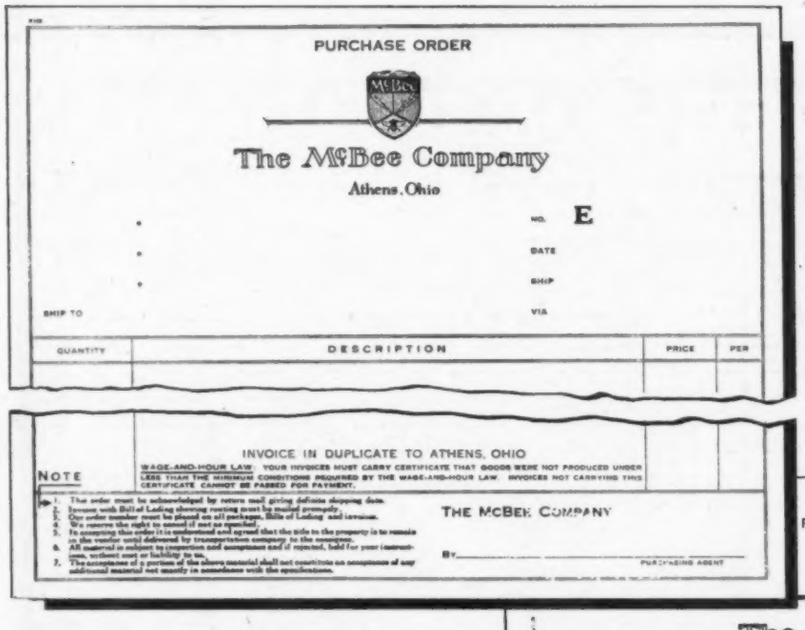
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1. The order must be acknowledged by return mail giving definite shipping date.
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3. Our order number must be placed on all packages, Bills of Lading and invoices.
4. We reserve the right to cancel if not so specified.
5. In accepting this order it is understood and agreed that the title to the property is to remain in the vendor until delivered by transportation company to the consignee.
6. All material is subject to inspection and acceptance and if rejected, held for your instructions, forfeited and/or liability to us.
7. The acceptance of a portion of the above material shall not constitute an acceptance of any additional material not exactly in accordance with the specifications.

THE McBEE COMPANY

By_____ PURCHASING AGENT

REQUEST FOR QUOTATION

The McBee Company

Athens, Ohio

Actual Size 8½" x 11"

NO. Q 276

DATE

F O B

VIA

PLEASE SUBMIT LOWEST PRICE ON MATERIALS LISTED BELOW

QUANTITY	DESCRIPTION	PRICE	PER

THIS IS NOT AN ORDER

(1) REPLY BY RETURN MAIL
(2) QUOTE F. O. B. ATHENS UNLESS OTHERWISE SPECIFIED
(3) STATE TERMS
(4) GIVE GUARANTEED DELIVERY
(5) SUBMIT QUOTATION ON THIS FORM

THE McBEE COMPANY

By HARRY M. BEGG PURCHASING AGENT

Neatness and simplicity feature the McBee forms

HARRY M. BEGG, Purchasing Agent for The McBee Company, Athens, Ohio, furnished the accompanying forms used by his department, for use in the Forum. McBee manufactures accounting and statistical cards, forms, binders and machines which are distributed through the company's sales offices throughout the country.

In addition to purchase order form and requisition, the group includes purchase department record sheet and two Keysort cards utilizing code systems, one of which is used by storekeepers, and the other by the purchasing department. There is also a "Request for Quotation" form which bears that title at the top, and "This is Not An Order" in large type in its lower section.

The purchase order form and the request for quotation will appeal to many purchasing agents because of their businesslike simplicity. The former is made out in quadruplicate, utilizing the color scheme of white, goldenrod, gray and white.

The original, of course, is the vendor's copy; the goldenrod copy is for the purchasing department open order file; the gray copy is for the department originating the requisition, and the fourth copy (white) which is a blank sheet, is termed the "receiving slip" and is sent to the receiving department. This sheet carries name of supplier and type of material ordered, only. It does not show prices or quantity. When material is received, the receiving clerk indicates the amount received on this copy returning it to the purchasing department where it is checked

NAME

SPECIFICATIONS

ORDERED FROM	DATE OF ORDER	ORDER NO.	AMOUNT ORDERED	DATE RECEIVED	COST PER	TRANSP. CHARGES	TOTAL COST OF LOT	AMOUNT RECEIVED	USED THIS MONTH	REMARKS		

QUOTATION FROM	DATE OF QUOTATION	QUOTATION NUMBER	AMOUNT	DATE RECEIVED	COST PER	F. O. B.		MARKET		REMARKS		

Above: Purchase Record. One of the forms is used for each major commodity.

Right: Keysort card used by Purchasing Department to record amount spent annually with different companies.

Below: Keysort card used by storekeepers to record withdrawal of material.

(*Continued on page* 302)

7 4 2 1 TENS 7 4 2 1 UNITS — AGENCY NUMBER; 7 4 2 1 HUNDREDS 7 4 2 1 TENS 7 4 2 1 UNITS — VENDOR NAME CODE

VENDOR NAME

ADDRESS

AGENCY

DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT

THE McBEE COMPANY

25475

R — 7 4 2 1 TENS 7 4 2 1 UNITS — NO. AND SUB-CENTER; 7 4 2 1 THOUSANDS 7 4 2 1 HUNDREDS 7 4 2 1 TENS 7 4 2 1 UNITS — ORDER NO.

FORM K 14

TO

CHARGE: ORDER No. 67491 ACCOUNT PART SUB-CENTER

FROM

CREDIT 5423 PART ACCOUNT SUB-CENTER

PART NUMBER	QUANTITY	UNIT	DESCRIPTION	STD. COST	AMOUNT
97	6	ea	Binder Post	9.706	.58

McB DATE: 9-17-46 SIGNED: John Jones.

CHARGE-PART NO.-OR ACCT. 1 7 4 2 1 UNITS 1 7 4 2 1 TENS

CREDIT-PART NO.-SUB-CENTER 1 7 4 2 1 UNITS 1 7 4 2 1 TENS 1 7 4 2 1 HUNDREDS 1 7 4 2 1 THOUSANDS 1 7 4 2 1 TENS-THOUSANDS 2 1 7 4 2 1 UNITS — ACCOUNT

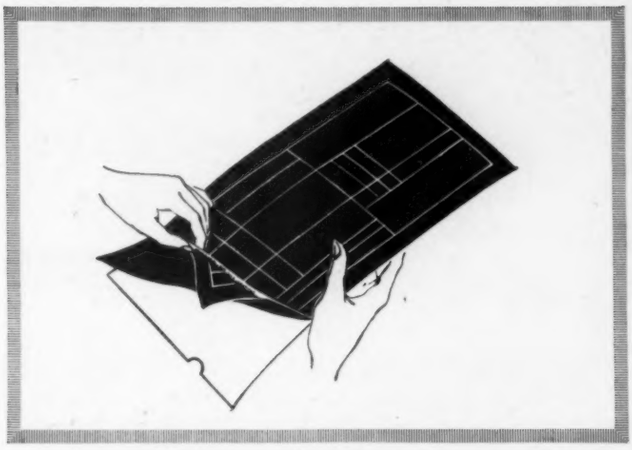
CREDIT AMOUNT 1 7 4 2 1 UNITS 1 7 4 2 1 TENS

49751

Do it with one writing!

Read how Mimeograph brand die-impressed stencils speed paper work production for food chains, drug chains, factory systems, routines, methods.

As many copies as you need on the kinds of forms you want to use—*and from a single writing*—that's the big speed-up Mimeograph brand die-impressed stencils give to paper work production.



Food chains have lists of produce die-impressed into Mimeograph brand stencil sheets, leaving space for daily price changes. Drug chains make similar forms for "in-and-out" inventory control. Factories set up a complete paper work control system with ruled forms and headings already stencilized.



Then all your typists have to do is add the variable, fill-in material by typewriter.



The completed form and variable information are produced together in one operation on the Mimeograph brand duplicator.

It's as simple and easy as that! You don't have to wait for preprinted forms. One proofreading is enough, for all copies are identical. And all copies are easy to read, clear, black-and-white — won't fade even with hard handling.

For complete details and expert assistance, write A. B. DICK COMPANY, 720 W. Jackson Boulevard, Chicago 6, Illinois.

FREE ***Send for more information on Mimeograph brand die-impressed stencils—how they speed production, save money, and simplify control of paper work systems and procedures.***



A. B. DICK COMPANY, Dept. P-1146
720 West Jackson Boulevard, Chicago 6, Illinois

Send me a copy of your new folder, "Mimeograph Die-Impressed Stencils."

NAME.....

COMPANY.....

STREET.....

CITY.....STATE.....

COPYRIGHT 1946, A. B. DICK COMPANY

Mimeograph brand duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

ARE YOUR RECORDS AS SECURE AS THE FUTURE OF YOUR BUSINESS?

Generations yet to come will conduct your business on the basis of records which you are preparing today. Will they have occasion to commend you for selecting record paper that remains strong, firm and usable in spite of time and use? Are you making sure that the paper you choose for important, long-term records provides a safe, enduring foundation and lasting protection in keeping with their current and future value?

For your own protection and for future security, make sure that all key records—production, distribution, financial, legal, insurance, etc.,—are preserved on Weston-quality paper. Made of strong, durable cotton fibre expressly for records *worth keeping*, they have the qualities of resistance and endurance, appearance and serviceability that important records require and deserve. Ask your supplier to show you Weston cotton fibre Permanent Record, Ledger, Bond, Index and Machine Accounting Papers to suit your special record keeping needs.

BYRON WESTON COMPANY, DALTON, MASSACHUSETTS



If it's worth keeping, keep it on a WESTON *Paper*

Weston Makers of Papers for Business Records

STARRETT MADE SALES MANAGER ROYAL STANDARD DIVISION

The appointment of David B. Starrett as Sales Manager, Standard Machine Division, Royal Typewriter Company, has been announced by President Maxwell V. Miller.

Retaining his post as Eastern Sales Manager, Mr. Starrett will, in addition, have charge of all domestic standard machine sales operations.

Mr. Starrett started with Royal as a junior salesman in Chicago in 1915.



David B. Starrett, Sales Manager, Standard Machine Division, Royal Typewriter Company

After serving as an officer in the U. S Army in World War I, he returned to Royal as a salesman in the San Francisco office and shortly thereafter became San Francisco Manager. Mr. Starrett also managed the Oakland office prior to being named Portland, Ore. Manager in 1929.

As Assistant Sales Manager from 1935 to 1939, Mr. Starrett traveled throughout the west. In 1939, he returned to Portland as District Manager in that territory. Mr. Starrett was named Eastern Sales Manager in direct charge of 47 Eastern branches in April, 1944.

* * *

GREATER DIFFERENTIALS ESTABLISHED FOR SHEETING AND PACKING NEWSPRINT

Greater differentials have been established for sheeting and packing newsprint in a move designed to encourage manufacturers to produce sheeted newsprint for customers desiring it in that form, the Office of Price Administration announces.

The differentials, effective October 7, 1946, which can be added to the prevailing ceilings for newsprint in rolls, are listed in dollar-and-cent terms, and are generally $5 a ton above the October 1-15, 1941 differentials heretofore in effect.

For standard sheets of newsprint and the customary pack, the new differential that will be most commonly used is $13 a ton. The range is up to $28 a ton, depending on the type of packing.

For cutting into smaller sized than the standard sheets, further differentials are provided ranging from $10 to $20 a ton.

OPA said that this action will have very little effect on the industry as less

(*Continued on page* 300)

This advertisement is one of a series appearing in four colors in Fortune, Nation's Business, United States News, Newsweek and Business Week.

Test your word knowledge
of Paper and Printing



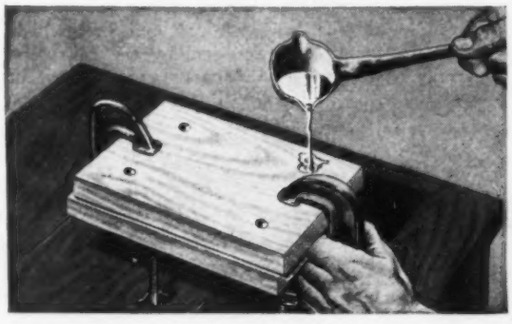
1. Monks and Friars

- ☐ Flooded and light patches in printing
- ☐ Illuminations in a manuscript
- ☐ Ascenders and descenders in Gothic type



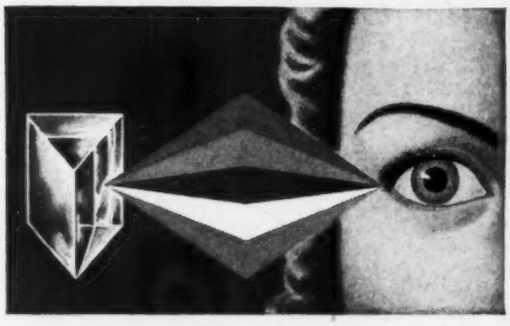
2. Printability

- ☐ A printer's ability to do fine work
- ☐ Legibility of type
- ☐ Property of paper which yields good printing



3. Soldier

- ☐ An itinerant pressman
- ☐ An exclamation mark
- ☐ Material for halftone anchors



4. Spectral Reflectance

- ☐ Phosphorescent quality in paper
- ☐ A measure of paper's opacity and color
- ☐ "Show through" in paper

ANSWERS

1 Monks and Friars—"Monks" are ink-flooded patches and "Friars" are insufficiently inked patches in a piece of printing. Avoiding uneven printing demands good presswork . . . and good paper, too. That's why many careful pressmen prefer to print on uniform Levelcoat.*

2 Printability, in paper, is that property which yields good printing. It comprises receptivity, uniformity, smoothness, opacity . . . all qualities you find in Levelcoat.

3 Soldier is known to printers as a name for the exclamation point...and "Levelcoat" is known to printers as a trademark which represents fine quality printing papers.

4 Spectral Reflectance is one of the physical measurements important in determining the opacity and color purity of paper. And Levelcoat papers achieve a remarkable amount of spectral reflectance—a test of their high degree of opacity and surface luster.

Levelcoat*

PRINTING PAPERS

If our distributors cannot supply your immediate needs, we solicit your patience. There will be ample Levelcoat Printing Papers for your requirements when our plans for increased production can be realized.

A PRODUCT OF Kimberly Clark RESEARCH

KIMBERLY-CLARK CORPORATION
NEENAH, WISCONSIN

*TRADEMARK

Anyone CAN CARRY IT...
Everyone CAN USE IT...

THE MARKET'S BEST POPULAR-PRICED DUPLICATOR

THE *Columbia* NO. 1 "PORTABLE"



LOW PRICE
UNUSUAL VERSATILITY
LIGHT WEIGHT



– bring the outstanding, easy-to-carry duplicator within the use-and-price range of:

THE SMALLEST BUSINESSES, "DEPARTMENTAL" USE BY LARGER FIRMS, CHURCHES, SCHOOLS, RESTAURANTS

Turns out sharp, beautiful copies from typed or handwritten originals. Furnished complete with Columbia "all-season", moisture retaining Gelatine Roll.

Ask your office supply dealer or the Columbia office nearest you for prices and information.

COLUMBIA RIBBON & CARBON MANUFACTURING CO., INC.
Main Office & Factory: Glen Cove, L. I., N. Y.
New York Sales & Export: 58-64 West 40th St. • Midwest Sales: Kansas City, Mo., Dwight Bldg. • Chicago Detroit • Milwaukee • Minneapolis • Nashville • Philadelphia • Pittsburgh • Portland, Oregon Cincinnati (Harris-Moers Co.) • Atlanta • Also: London, England • Sydney, Australia • Milan, Italy

(*Continued from page* 298)

than one per cent of total production is sold in sheet form.

The differentials are the same as those already provided for book and writing papers and for groundwood specialty papers.

(Amendment 14 to RMPR 130.)

PETER G. KLOTZ RETIRES FROM HINDE & DAUCH PAPER CO.

Announcement is made of the retirement of Peter G. Klotz, vice president in charge of factory operations of the Hinde & Dauch Paper Co., Sandusky, Ohio, after 50 years of continuous service. He joined the company in April 1896 as an operator in the bottle wrapper department. He was named superintendent of the Sandusky plant in 1903. He assisted in the development of the corrugated shipping box which was finally accepted by the railroads in 1906. He was named vice president of the company in January 1926, supervising the operations of the company's fifteen factories.



Peter G. Klotz

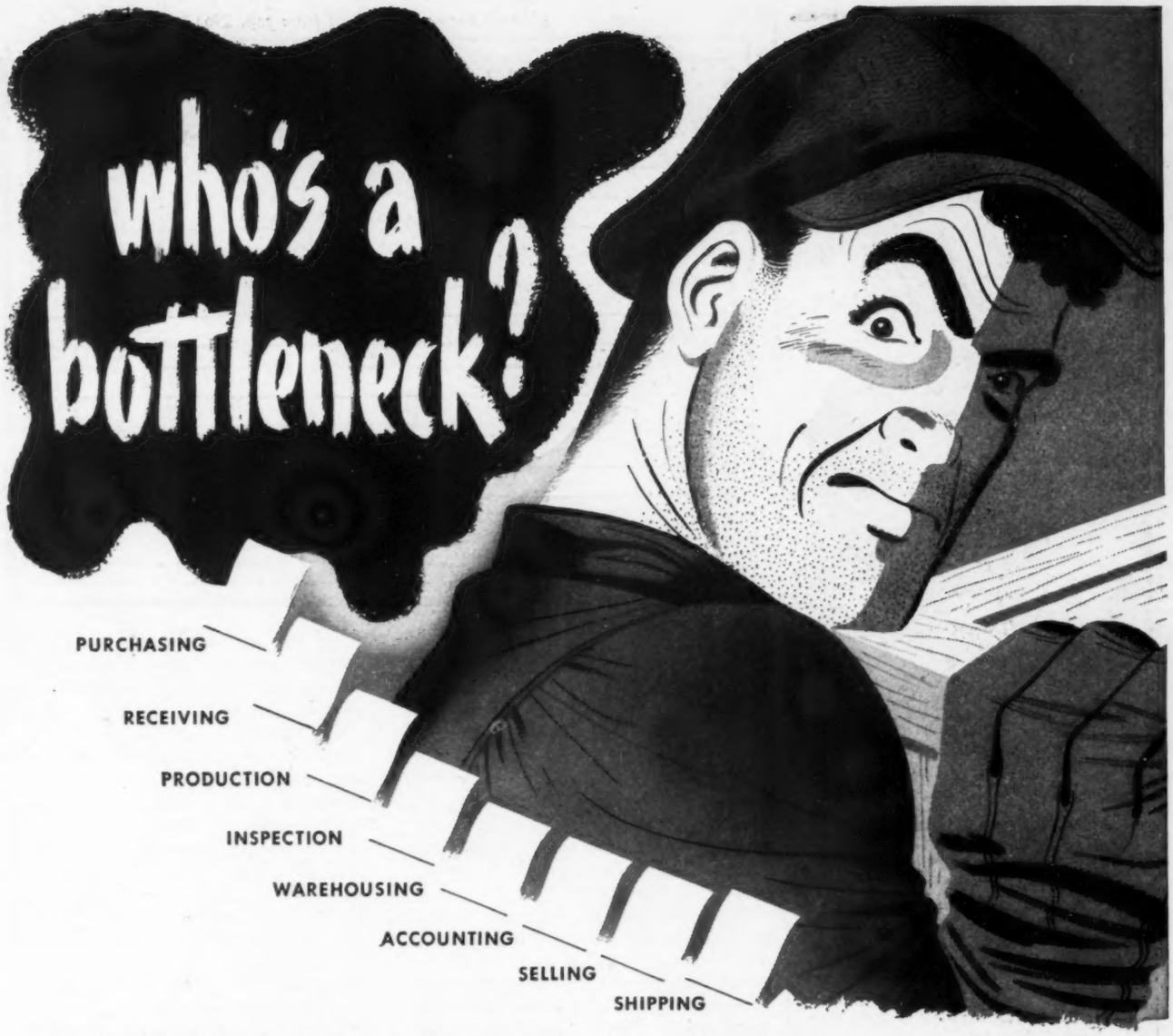
SHEPPARD ENVELOPE COMPANY ADOPTS NEW TRADEMARK

The accompanying illustration is that of new trademark adopted by the Sheppard Envelope Company of Worcester, Mass., succeeding that used during the company's first 25 years' of existence. The company recently announced the "Shepco Flavor-Seal envelopes which are featured by a double mint flavored sealing flap. The theme of the promotion campaign therefor is "Lick an Envelope and Like It."



Sheppard Company's new trademark.

who's a bottleneck?



No slam intended, Mac. If you're a bottleneck, it's only because you're frustrated by inefficient forms. Such forms can bottleneck the best efforts of workers in any business.

Yes, in every operation of every business it's forms that guide products and services from first to final stages . . . from raw material to the finished product that the consumer buys. Well-designed forms promote smooth, profitable product movement through purchasing — production — accounting — warehousing — inspection — receiving — shipping — wholesaling — and retailing.



For Instance . . . UARCO E-Z-Out Forms. Available in single unit or continuous-strip forms. No fuss or bother of adjusting carbons—thanks to pre-inserted carbons. Copies are always legible, kept together, yet easy to detach.

Take a look at your own routine orders and records. Are the forms that guide them designed to provide maximum speed, control and efficiency? And how about their number? Perhaps several of your present forms could be combined . . . profitably and efficiently. It can be well worth your while to check into your entire form system—from planning to selling.

You'd find it helpful, too, to consult your Uarco representative. He can tell you how Uarco has solved the form problems of hundreds of diverse businesses . . . and cut the costs of their routine operations. So call in your Uarco representative and let him study your routine operations—there's no cost. UARCO INCORPORATED, Chicago, Cleveland, Oakland. *Offices in All Principal Cities.*



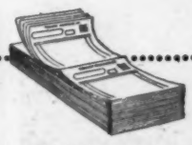
AUTOGRAPHIC REGISTERS AND REGISTER FORMS

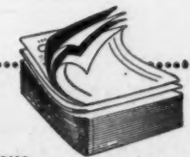


SINGLE SET FORMS

UARCO
INCORPORATED

BUSINESS FORMS





CONTINUOUS-STRIP FORMS FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS

We have reduced our Typing, Mailing, and Filing costs by using



ESLEECK
THIN PAPERS

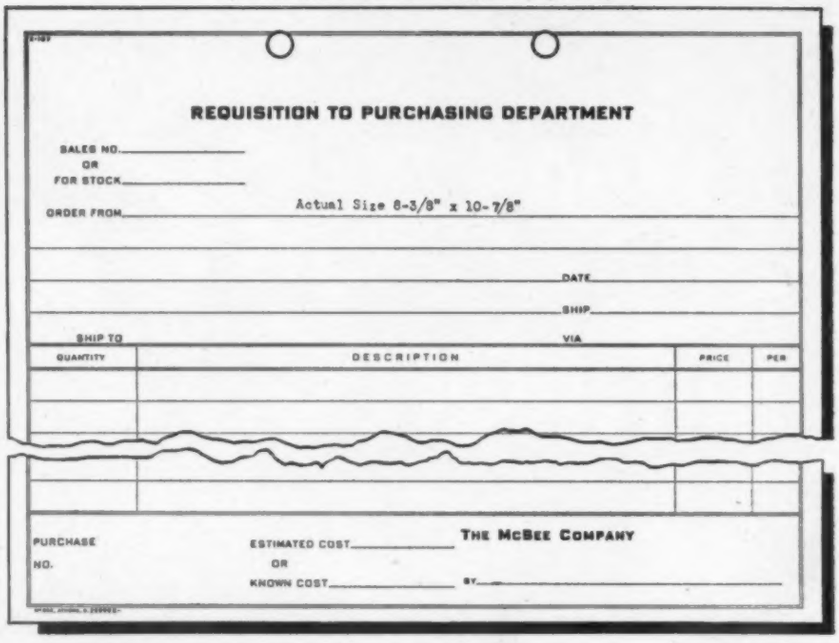
They are strong and durable, yet have minimum bulk. Their lightness and strength combined, allow us to make numerous clean, clear carbon copies. We use them now for Thin Letterheads on all our Branch Office, Foreign and Air Mail correspondence. We also use the distinctive colors for our office records and factory forms.

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

SEND FOR SAMPLES

ESLEECK
Manufacturing Company
Turners Falls, Mass.

(*Forms Forum, Continued from page 296*)



REQUISITION TO PURCHASING DEPARTMENT

SALES NO. _____
OR
FOR STOCK _____

Actual Size 8-3/8" x 10-7/8"

ORDER FROM _____ DATE _____

SHIP _____

SHIP TO _____ VIA _____

QUANTITY	DESCRIPTION	PRICE	PER

PURCHASE NO. _____ ESTIMATED COST _____ OR KNOWN COST _____ BY _____

THE McBEE COMPANY

against the invoice and for such further action as may be necessary.

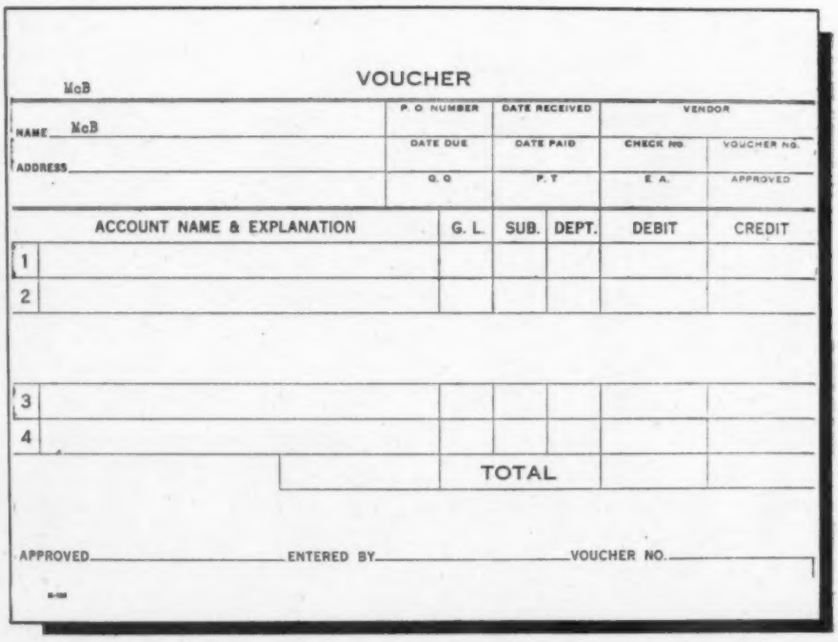
The "Requisition to Purchasing Department", which is on letter-size blue stock, may be used as a purchase requisition or as a stock order. It is ruled on standard typewriter spacing, for either longhand or typewriter use. The purchasing department files its copies of requisitions in numerical order, though the working copy of the purchase order itself is filed alphabetically.

The department's "Purchase Record" is an interesting form, and is reproduced. It is a large form on heavy stock, approximately 12" x 12". At the top, name of product is entered, followed by line for specifications. One of these sheets is made for each major commodity. It will be noted that the form provides a rather complete history of product procurement, commencing with name of supplier, unit cost, transportation charges, and monthly usage. The lower section of this form provides space for recording and analyzing quotations. Special cards are made up for items which are purchased infrequently.

As invoices are received they are entered on purchase record, after checking, and a voucher form (this page) attached to the invoice, accompanying invoice to the accounting department. The voucher form gives necessary data for the accounting procedure.

The large Keysort card reproduced on page 296, actual size 7½" x 3¼"), is used by storekeepers to record withdrawal of

(*Continued on page 306*)



VOUCHER

McB

NAME McB _____ P. O. NUMBER _____ DATE RECEIVED _____ VENDOR _____

ADDRESS _____ DATE DUE _____ DATE PAID _____ CHECK NO. _____ VOUCHER NO. _____

Q. Q. _____ P. T. _____ E. A. _____ APPROVED _____

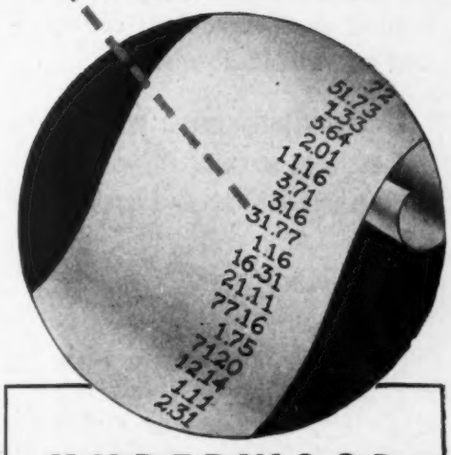
	ACCOUNT NAME & EXPLANATION	G. L.	SUB.	DEPT.	DEBIT	CREDIT
1						
2						
3						
4						
	TOTAL					

APPROVED _____ ENTERED BY _____ VOUCHER NO. _____



Underwood Sundstrand . . .
KEYBOARD EXPRESS
to Figure Facts!





HERE'S your quickest . . . most direct approach to figure facts . . . the Underwood Sundstrand Adding Machine.

Only 10 figure keys . . . all under the finger tips of one hand . . . eliminate unnecessary arm and hand travel. You are actually miles and minutes closer to the figures you need.

Speed is built into this machine's operation, too. Fingers ripple over the keyboard . . . setting up numerals . . . adding, subtracting or multiplying . . . providing totals, sub-totals, and credit balances . . . in the shortest possible time.

High speed "touch method" of operation can be acquired by any employee in just a few hours.

Underwood Sundstrand Adding-Figuring Machines are made in types and capacities to meet the requirements of every business. They are saving minutes and money for chain stores, offices, banks, factories, etc. For detailed information, call your nearest Underwood Representative today.

UNDERWOOD CORPORATION

Adding Machines . . . Typewriters . . . Accounting Machines . . . Carbon Paper . . . Ribbons and other Supplies.

One Park Avenue, New York 16, N. Y.

Sales and Service Everywhere

★

Underwood . . .

Speeds the World's Business

Copyright 1946 Underwood Corporation

COMMERCIAL FORMS AND SYSTEMS



An ally of modern management, Reynolds and Reynolds *is* one of the world's largest suppliers of printed or lithographed control and operational forms.

- CARBON INTERLEAVED SYSTEMS
- BUSINESS MACHINE FORMS
- PAYROLL CHECKS and SYSTEMS

Effective Advertising Literature, Distinctive Stationery and Business Forms of every kind

The REYNOLDS & REYNOLDS COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN MANY PRINCIPAL CITIES

High Spots of

OFFICE MANAGEMENT CONFERENCE

Reducing Paper Work, Office Space Control, Labor Shortage and Job Evaluation Among Subjects Considered at American Management Association Meeting

AN office unit dedicated solely to insuring adherence to management policy, a method of reducing work and costs by consolidating and eliminating paper work and ways for planning for the maximum use of office space in the face of present space shortages, and other pertinent subjects were presented at recent American Management Association conference on office management, held in New York.

Joseph S. Covell, systems manager of International Resistance Company, Philadelphia, recommended a policy enforcement unit to office managers troubled by the present shortage of competent office help, adequate equipment, and floor space, who have to be sure there is no wasted effort in their offices.

It might be a one-man unit in the case of a small office with the office manager handling the job himself, or a separate unit operating under a "systems manager" in larger organizations, he said. But he termed it "a must for survival."

He said representatives of such a systems unit should periodically review procedures with employees who perform the work to make certain there is no lost time or motion. He warned that "issuing fewer procedures and making certain they are followed produces more successful results than many procedures that are disregarded."

"Many firms recently learned, regretfully so," Mr. Covell said, "that the days of free and uncontrolled spending are over. During the war years the emphasis was generally placed on production alone. Today it is being placed on work simplification throughout the company—paper work, personnel, and proper use of office equipment, as well as production."

He recommended supplementing the issuance of formal procedure orders with flow charts, organization diagrams. He said that the systems unit should continually review organizations and methods and coordinate over-all company activity.

Reducing Paper Work

Barrett B. Klopfer, general office manager, Standard Register Company, Dayton, Ohio, told the executives that cost production and the usage of forms is usually approached from the standpoint of standardizing sizes, weights, colors, group printing orders, but that much more can be gained now by questioning the design of the form and the reason for its use in the first place.

"Management is getting away from the query 'How much does this form cost?'" Mr. Klopfer said. "It is learning that an improperly designed form for which he paid the printer one cent may require as much as one dollar's worth of employee labor to fill it in, whereas a scientifically drafted form produced at a cost of six cents may require only 50 cents worth of employee time."

He suggested that office managers ask themselves if forms they are presently using really control or guide the industry's or business's operations with which they are used. He said a well designed form should be easy to follow, facilitate a flow of continuous writing, require a minimum of writing, take full advantage of writing machine facilities, be easy to handle and economical in size.

Space Control

Kenneth H. Ripnen, head of Kenneth H. Ripnen & Company, Inc., told the conference that office desks should be spaced six feet apart and that when two desks were placed end to end four feet should be allowed between them for aisles and seven feet between groups of two.

He said aisles in central files should be a little better than two feet apart for storage and transfer files and 8 feet for active files, allowing for passing of two people even while a drawer is pulled out on either side of the aisle.

Speaking on the proper administration of space in offices, Mr. Ripnen said that if no important factor is overlooked, "any five of us would come up with the same office layout, whether it was the main executive office of a corporation, a plant office or a sales office," but if any of the functions or activities of an office were in any way overlooked the layout could seriously impede office operations.

The office executive must keep himself up-to-date on all information or organization, procedures, and personnel so that he can anticipate changes in office layout and exercise space control that will materially increase efficiency and reduce costs, Mr. Ripnen said.

He predicted that the present office layouts will give way to the standardized and more flexible integrated office plan which can grow with the organization.

Labor Supply

A picture of the nation's supply of office workers showing a steep decline in the number of young women available with indications of an even tighter office labor market in the future and a belief that wage incentives can increase office worker output 50 to 100 per cent were put before the Conference by various speakers.

A. Ford Hinrichs, former acting commissioner of the Bureau of Labor Statis-

(*Continued on page* 306)



First for Forms

Form printing is a big item. It is one of those cases where you have to keep one eye on quality and the other eye on costs.

The easiest way is to print your business forms on Eastern's Manifest Bond. Then you will have quality combined with economy

A clean, crisp, sturdy sheet, Eastern's Manifest Bond is popularly accepted by buyers of business printing as the leader in the economy group of mill brand papers.

Comes in pink, blue, green, canary, goldenrod, and buff...as well as white.

EASTERN'S
Manifest Bond
MADE BY
EASTERN CORPORATION
BANGOR, MAINE

FIRST IMPRESSIONS GO BY MAIL!



Be sure your letterhead gives the *right* impression of your organization. Your printer is the man who can best advise you on this important matter. Paper is an old story to him. He handles it every day. He can tell you in a flash whether it has the quality you require. For executive letterheads ten-to-one he will recommend Rising Parchment . . .

Rising Parchment

- ✓100% rag ✓Super Opaque
- ✓Four Weights
- ✓Distinctive unglazed parchment finish
- ✓6 standard sizes of envelopes

When you want to KNOW . . . go to an expert!

Rising Papers

Rising Papers

Ask your printer . . . he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

Ready Now!

RediFixt

1947

W-2

Withholding Tax Form

Write today for sample on officially approved PINK paper

CONSOLIDATED BUSINESS SYSTEMS, Inc.

Dept. 006
30 Vesey Street
New York City, 7

Old Town

RIBBONS CARBONS Duplicating Supplies

For those who prefer the best

BROOKLYN 17, N. Y.

Forms Forum

(*Continued from page* 302)

material, either raw or semi-finished. Information as to type of material is coded. These are forwarded to the cost department where upon completion of a production order, the cards are keysorted and along with other accounting procedures, applicable deductions made from the inventory records.

The small Keysort card, also reproduced on page 296, (actual size 6" x 4") is used by the purchasing department to record the amount spent annually with different companies. It is coded according to vendor name and the McBee Company's own sales territory, furnishing desired information in event the question of reciprocal buying should develop.

Office Management Conference

(*Continued from page* 304)

tics and now economist for the Kiplinger Washington Agency told the meeting that the number of women available for office work between the ages of 20 and 35 years, the core of the office and clerical working force, is now one million below the normal level based on pre-war trends. He advised the office executives that they could expect the labor shortage in their field to persist "for sometime."

Mr. Hinrichs participated in a round-table on work and pay standards necessary to assure compensation that will attract additional manpower to office work.

More than one and one-half million women quit the office force, Mr. Hinrichs said, chiefly because their husbands returned from the Armed Forces or they married returned veterans. He said thi has had a particular effect on office help because by war's end, seven out of ten clerical workers were women although before the war only half were women.

"By V-J Day there were seven million extra workers in the American labor force," the economist said. "One year later the number had decreased to a little over two million—and most of the decline was accounted for by women."

He said that this did not mean that an overall labor shortage is developing. Much of the employment of the past half year was taken up in preparing for the production of goods expected in the next six months. A sharp rise in the flow of finished goods will be accompanied by a smaller proportionate increase in employment he told the meeting.

"The current unfilled need for labor is largely of two types," Mr. Hinrichs said. "Key positions for which there is an inadequate number of trained persons and the relatively low-paying jobs which are always hard to fill in times like the present. Both types are pertinent to office work."

Mr. Hinrichs also pointed out that premium rates for overtime and extra shifts which contributed to the upswing of gross earnings of factory workers were

(*Continued on page* 308)

"Here's why Swingline speeds production!"



They're 100% ROUND WIRE—that's why SWINGLINE Staples step up production in your office! You see, ROUND WIRE is stronger—gives cleaner penetration. And important! ROUND WIRE requires less strip-adhesive, commonest cause of clogging with ordinary staples. SWINGLINE precision-made Staples are also 100% uniform, machine-counted, accurately aligned—and best for all standard staplers. If plenty of speed is what you need, get SWINGLINE trouble-free staples at your stationer's today!

SPEED PRODUCTS COMPANY, INC.
Long Island City 1 • New York



All SPEED products sold through dealers only

SEE SWINGLINE'S NO. 4 STAPLER, TOO!

Note these features: Triple action! It *pins, tacks* and *staples!* Swing-Back head—greatest improvement in 20 years—exposes wide-open loading channel, permits quick and easy loading.

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NO. 4 STAPLER AND STAPLES

WORLD'S SPEEDIEST STAPLING TEAM



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Webster's Micrometric — the only carbon paper with the *scale* edge — takes *all* the guesswork out of carbon paper purchasing.

Secretaries like Micrometric. Its numbered scale — actually a part of each sheet — prevents poor spacing and saves retyping. And they avoid finger smudges by using the handy edges in removing carbons.

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P.A.'s go for Micrometric's economy. It's priced no higher than other carbon papers of the same high quality. So you *know* you're getting more for your money when you buy the carbon paper with the *scale* edge — Webster's Micrometric.

Progressive businesses — big and small — are finding new uses of this product every day.

TRY SAMPLES AT OUR EXPENSE . . . ORDER NOW!

- **Carbon papers and typewriter ribbons**
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Your order will be promptly delivered. Write or telephone F. S. Webster Company, 7 Amherst St., Cambridge 42, Mass.

WEBSTER'S

Micrometric Carbon Papers and Typewriter Ribbons

MULTIKOPY MICROMETRIC MULTIKOPY NOISELESS

(*Continued from page* 306)

not shared as a rule by the clerical workers during the war. Tabulations of wage increases since war's end, he said, "show that plant employees starting off from a higher base have received higher increases both in absolute and percentage terms than office workers."

He predicted that the labor market nationally, as well as among women, will not ease in the immediate future.

Wage Incentives

R. S. MacKenzie, chief industrial engineer of the Atlantic Refining Company, Philadelphia, told the Conference that output per office worker can be increased from 50 to 100 percent with an accompanying saving in floor space and equipment if wage incentives employed in many factories are established in offices.

He said work measurement and wage incentive plans had been successfully applied to most basic office operations, and that the office worker "is going to demand the same opportunity for extra earnings through incentives as is enjoyed by the plant worker."

He outlined the prerequisites for installing a "payment for production" plan and estimated that a 20 percent net labor cost reduction "is normal expectation with many cases doubling this figure."

Mr. MacKenzie said experience showed "the preincentive level of productivity to be running from 40 percent to 60 percent of a full day's work."

"A fair day's work is looked upon by informed members of management as being something in the neighborhood of two-thirds of a full potential day's work," he told the conference, "and even this two-thirds day's work is seldom reached or maintained for the payment of basic wages alone."

Mr. MacKenzie said self-satisfaction, promotion and fear of losing the job were incentives overshadowed by the negative influence of resentment incurred by the "eager beaver," an impression output plays little part in gaining promotion, and "the unfortunate human characteristic of wanting the most in return for giving the least."

Wage Structure

L. B. Michael, Manufacturing Engineer, Wage Practices, Western Electric Company, New York, advocated the continuing administration of job evaluation and salary standardization plans to bring stabilization to the office wage structure and afford an equality of opportunity for pay and promotion

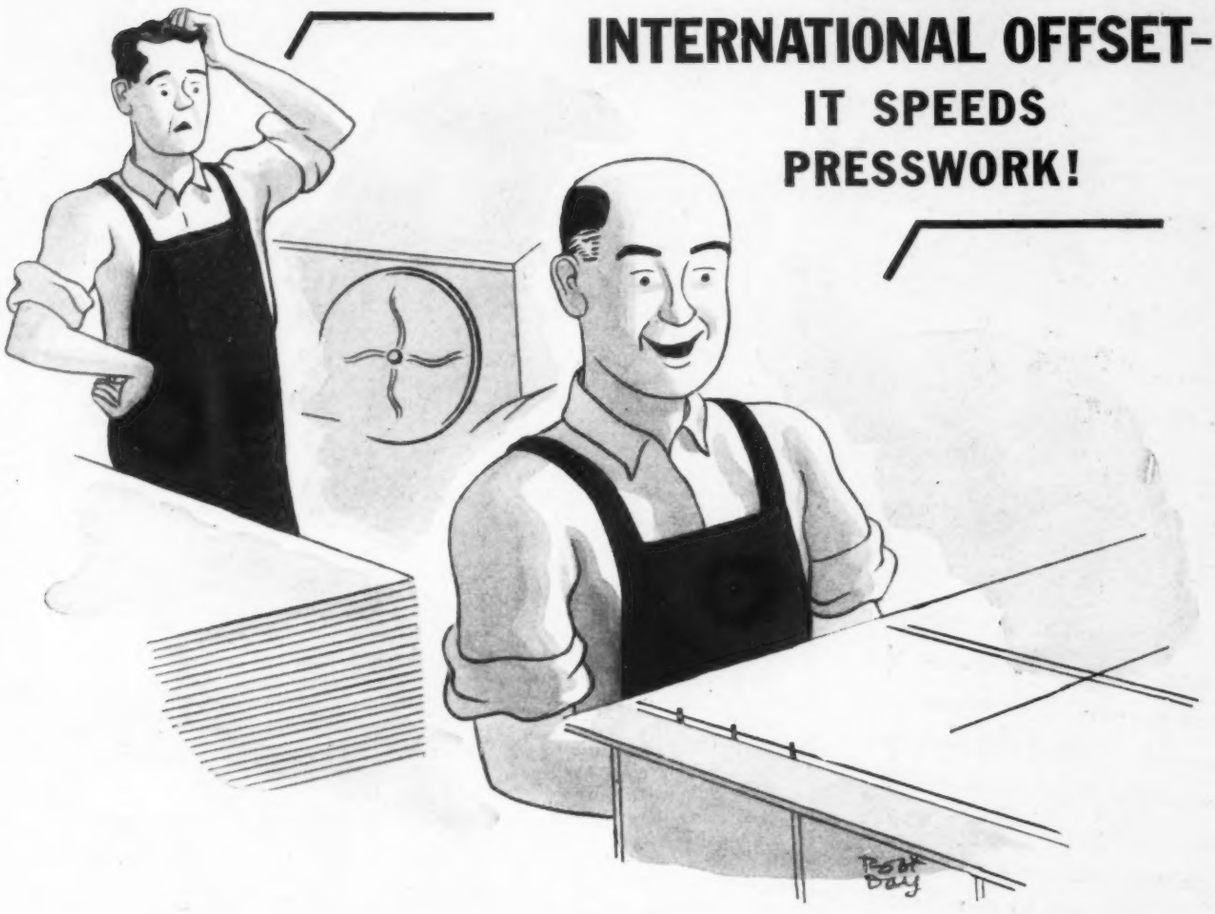
He said that such plans should be administered by a central organization within the company so as to assure uniformity among departments which would eliminate discontent.

He listed for the conference 15 requirements for effective salary administration and counselled that after all jobs are studied, described, evaluated and assigned appropriate pay, that employees should not be kept in the dark on salaries or job rating.

Business offices have become a great deal more complex than they should be

(*Continued on page* 310)

HOW CAN YOU SMILE THAT WAY— WITH A BIG JOB MARKED *RUSH*?



IT'S good to know you can turn out a quality job in jig time—when you have INTERNATIONAL OFFSET to help you!

This strong, surface-sized, fuzz-free sheet is noted for its ability to lie flat. In long runs of single or multiple color—whether off-set or letterpress—you can count on maximum press performance.

Top-flight lithographers show their knowledge of papers by choosing INTERNATIONAL OFFSET for broadsides, brochures, booklets, envelope enclosures—and other pieces on which their reputations hinge.

Not quite enough of this popular paper to meet today's demand—even though we produce as much INTERNATIONAL OFFSET as limited supplies will allow. International Paper Company, 220 East 42nd Street, New York 17, N. Y.

INTERNATIONAL PAPERS *for Printing and Converting*



Quality of washroom service is a most apparent expression of management's interest in employee comfort and convenience. For better service, with less waste, choose Straubel quality paper products...made to fit all standard dispensers.



Straubel's *Alcove* tissue—in the guest rooms of better hotels everywhere.

Write for name of your nearest Straubel distributor

Straubel
PAPER COMPANY
GREEN BAY, WISCONSIN

TWO LEAF ★ THREE LEAF ★ *Alcove*
CONVENIENCE CUT TOILET TISSUES
Straubel TEXTURIZED TOWELS ★
★ GROUNDWOOD · SULPHITE TOWELS

(*Continued from page* 308)

and in some cases have reached a point where they are an end in themselves rather than a service organization, according to Joseph M. Robins, president, The Roberk Company, Norwalk, Conn.

Mr. Robins suggested to the assembled office executives "that you arm yourselves with common sense, a concept of the office as a service center and cynical attitude toward sacred cows" in office administration.

He said he knew too many offices where last year's Christmas cards were neatly filed away and about which fugitives could say "let's hide in these files, no one will ever look for us here."

He asked office managers to cultivate the habit of tearing up unnecessary correspondence, abolishing useless carbon copies and a myriad of paper forms which he said are often used "because they always have been."

Mr. Robins advised office managers to look at Army methods. Even though "poking fun at army red tape in popular," the Army has prepared booklets on office routine and control, one of which gives a complete treatise on correspondence of less than 100 words, he said.

He suggested, too, that the salutations and closings in correspondence might be eliminated because they have become so formalized as to be meaningless.

He cited cases of companies that have eliminated customer statements of accounts as unnecessary unless accounts are delinquent, of routing carbons of memoranda and correspondence from department to department rather than preparing one for each "only to find they are all withering in the files within 24 hours," and statistical reports still being prepared although their reasons for existence had long since vanished.

He reminded the office executives that the familiar term "work simplification" "presupposes an existing complexity which might well be removed from the office if executives will institute a process of 'debunking' in their own company."

ANNOUNCES NEW METHODS DEVELOPMENT DEPARTMENT

The formation of a new methods development department in the head office of Shell Oil Co., Inc., New York, was announced recently by E. C. Peet, vice-president and treasurer.

The new department, headed by F. J. Morrison, will study office procedures and equipment, with the aim of developing new or improved methods. To this end, it will keep informed of the latest technical developments in office equipment, and will determine the most suitable equipment for various office functions. It will also assist in the installation of new procedures. The services of the department will be made available to all branches of the Shell organization, Mr. Peet said.

Morrison, who will be in charge of the new activity, was born in St. Louis, Missouri. He graduated from Yeatman High School and St. Louis University, majoring in commerce and finance. Immediately thereafter, he began his career with Shell as an accountant, and during the following six years progressed through positions of increased responsibility at various company offices. In 1937, Morrison was made chief clerk in the accounting department in Shell's New York head office. For the past two years he has been chief accountant in charge of marketing accounting.

NEW SPIRIT CARBON ANNOUNCED BY OLD TOWN

The development of a new type of purple spirit carbon, known as "Super-Kleen," has been announced by the Old Town Ribbon and Carbon Co. of Brooklyn, N. Y.

Super-Kleen is designed to eliminate excessive soiling of hands and clothes, which has heretofore been one of the chief disadvantages of purple spirit carbon duplicating. Offsetting and bleeding of the carbon surface against master paper is also held to a minimum, hereby removing the need of interleaving for protection. In appearance and general handling characteristics Super-Kleen resembles an ordinary sheet of black typewriter carbon.

Super-Kleen is said to be suited for use in teletype rolls, continuous forms and other applications where interleaving is impracticable.

(*Turn to page* 313)

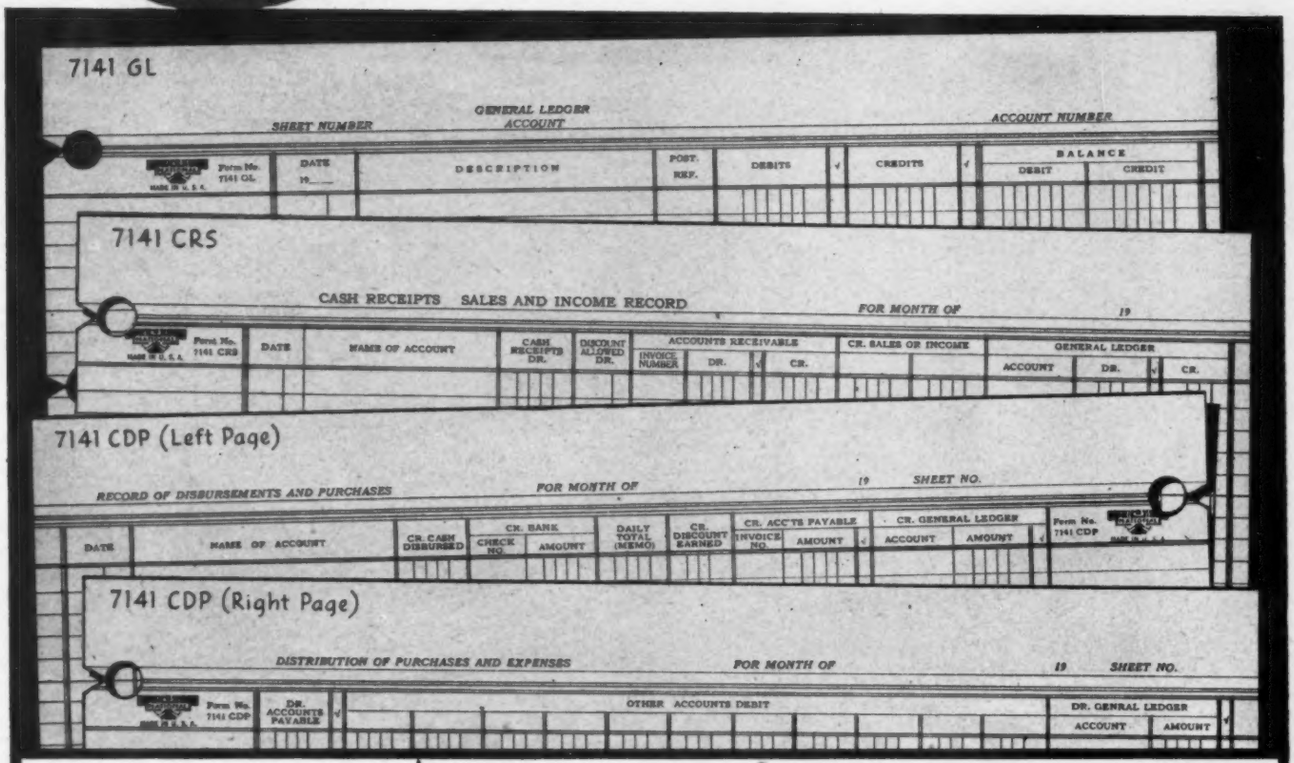


NATIONAL "EYE-EASE"

UNIT ACCOUNTING FORMS

(7141 SERIES)

fit every business need



In the popular 9¼" x 11⅞" size . . . . ruled brown and green on "Eye-Ease" green-white high rag content ledger paper, to reduce eye-strain and errors in posting.

THE COMPLETE LINE
7141 SERIES

100 Sheets to a box—25 Sheets per band

No.	Description
7141 CR	Record of Cash Received
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7141 RI	Record of Invoices or Vouchers
7141 RJ	Journal
7141 BS	Bank Statements
7141 PC	Record of Petty Cash
7141 CRS	Record of Cash Receipts and Income Record
7141 CDP	Record of Cash Disbursements, Purchases and Expenses
7141 GL	General Ledger
7141 FS	Financial Statements

THE WIDE CHOICE of expertly designed forms available in this new 7141 Series of Unit Accounting Forms makes it possible to meet the accounting needs of practically every business . . . from the small one-man establishments to the large corporations.

For example, forms 7141 CRS and 7141 CDP, illustrated above, provide all necessary original entries for the smaller business, with cash receipts and sales records on one form, check records, purchases and expenses on the other. Eight additional forms in this series, plus a wide variety of twenty-two in the larger 11" x 14" No. 7072 Series, fill the need for the more complete records of larger businesses.

The instant availability of these stock forms makes possible the immediate installation of complete record-keeping systems.

SEE YOUR STATIONER — or write us for descriptive Folder No. 41 with complete information, illustrations and prices.

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Reach for P.P.D.

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Here's a buyers' guide that is revised, checked, cross-checked and constantly improved to provide discriminating industrial buyers with an up-to-date source of new equipment . . . supplies . . . products . . . trade names . . . addresses . . . chemical and mechanical data.

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PAPER-LIKE PLATE FOR OFF-SET DUPLICATORS

Announcement is made by the Davidson Manufacturing Corporation, Chicago, Ill., of a paper-like plate for use on offset duplicating machines, known as the Paper Master. It is said to be as smooth and flexible as heavy paper, and its use requires no special preparation. It may be typed with any standard typewriter, billing machine, bookkeeping machine, or other mechanical writing device. Carbon or fabric ribbon may be used. Multicolor work is done by using a separate master for each color. Lines may be ruled with ruling pen for form work. Pre-printed master forms are available for various office forms, on which additional matter may be typed.

ONE-PIECE SWIVEL BASE STEEL OFFICE CHAIR

The first one-piece swivel base in the history of steel office chairs was introduced by Harter Corporation, Sturgis, Michigan at the National Stationers Convention held in Chicago September 30 through October 3.

Harter's new base will shortly be adopted as standard equipment on all swivel chairs manufactured by the steel chair firm. Evan S. Harter, president of the company, stated that the new base is designed "to combine maximum strength, the beauty of clean, flowing lines, and trouble-free operation." Stamped from a single sheet of formed steel, the one-piece base comprises a complete unit in itself.

Features of the new one-piece base

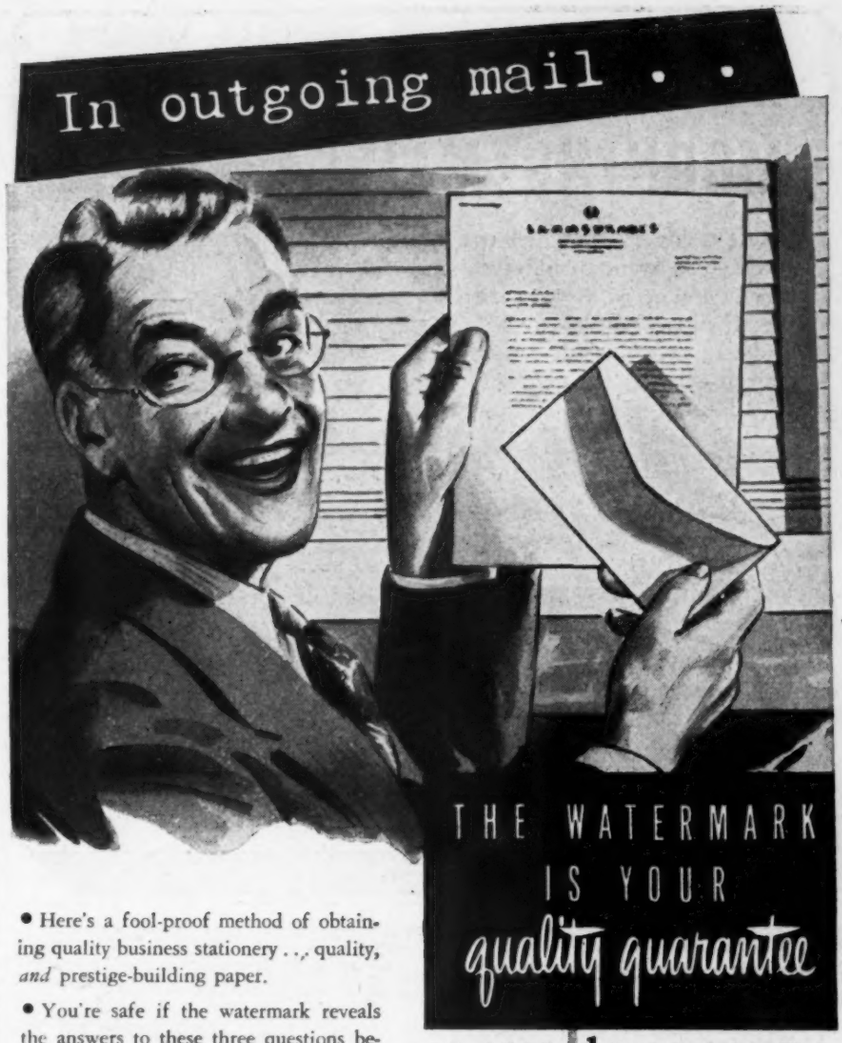


This is the Harter C-1500 Executive Chair on One-piece swivel base.

include an oil-impregnated bronze bearing on top of the sleeve which completely eliminates squeaks encountered in the revolving action. Lower than Harter's former base, the one-piece version is designed for adjustment to the new style low desks. Because it is the first swivel base to do away with nuts, screws, and bolts, the one-piece base solves the problem of rattles and noises. There are no castings, no brazing, nothing to come loose in the new base—it is arc-welded throughout.

Maximum strength is claimed for the

(*Continued on page* 314)



• Here's a fool-proof method of obtaining quality business stationery . . . quality, *and* prestige-building paper.

• You're safe if the watermark reveals the answers to these three questions because the finest papers are made from cotton fibre — the more cotton fibre, the finer the paper. Finally, it should reveal who made it . . . like Fox River, who has been making fine cotton fibre papers since 1883.

• Ask your printer, lithographer or engraver about these Fox River papers: Anniversary Bond with 100% cotton fibre, Old Badger Bond, 75% cotton fibre, English Bond, 50% cotton fibre and Dictation Bond with 25% cotton fibre. He'll be glad to recommend the paper with the correct cotton fibre content for each of your business needs.

BE SURE IT SAYS 3 THINGS
1 Does It Contain Cotton Fibre?
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FOX RIVER Fine Papers

BOND, LEDGER AND ONION SKIN PAPERS

FOX RIVER PAPER CORPORATION

403-K South Appleton Street • Appleton, Wisconsin

HOW TO STAND OUT IN THE MORNING MAIL!



WHEN YOUR SALES MESSAGE is style... when you want to be extra sure that it won't end up in the wastebasket—see that it is printed on a paper of smart distinction. Put your problem up to your printer. Paper is his bread and butter—he has the expert information you need at his fingertips. For fashion-wise promotions we're confident his selection will be

- √25% rag
- √2 weights
- √3 pastel shades and white
- √Exclusive pattern derived from Italian Handmade paper
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When you want to KNOW... go to an expert!

Rising Papers

Rising Papers

Ask your printer... he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

For Speed, Ease and Accuracy—



Elliot Fisher Machines Do Better Work Faster . . . with Old Dutch Carbon Rolls

OLD DUTCH CARBON ROLLS

You want crisp, clean-cut carbon copies that retain their legibility longer — that's your cue to order Old Dutch carbon rolls Their efficient performance on the Elliot Fisher machine saves you time, money and "do-over" jobs.

STYLES FOR EVERY NEED

- Available in single and multi-ply rolls.
- Correct weights and finishes for every requirement.
- Choice of colors, including hectograph carbon.

WATERS & WATERS BRANCH

511 LOCUST STREET, ST. LOUIS

LOS ANGELES, CALIF. SAN FRANCISCO, CALIF.

(*Continued from page* 313)

new base by Harter officials. In factory tests it withstood the pressure of 5 tons without breaking. Despite its greater strength, Harter's one-piece base weighs only 8¼ pounds—1⅞ pounds lighter than the old base. Elimination of castings makes possible this reduction in weight.

Stainless steel scuff-plates are furnished as standard equipment on the new base. These plates are twice the thickness of Harter's old plates to eliminate the possibility of denting. 2" ball bearing casters—set up into the base about ⅝" more than on the old base for better appearance—also come as standard equipment. Finish is available in Metallic Grey, Green, Brown, Grained Walnut and Grained Mahogany.

INTRODUCE STREAMLINED VARI-TYPER

The new streamlined Vari-Typer is the latest postwar convenience to emerge on the reconversion scene. It is manufactured by the Ralph C. Coxhead Corporation, 333 Avenue of the Americas, NewYork, and was displayed at the Business Show in Grand Central Palace. A completely streamlined office composing machine, the new Vari-Typer incorporates a hundred and thirty new parts involving many new and improved features in the machine's operation. Vari-Typer is used to produce copy for all printing and duplicating processes.



Automatic justification produced copy with even righthand margin.

The machine uses more than six-hundred different styles and sizes of type, plus foreign languages, special chemical, library, tariff and mathematical types, operated from a keyboard similar to that of the standard typewriter. Automatic justification produces copy, with an even right-hand margin, controlled by a dial near the center of the operator's vision. Type is instantly changeable, as is spacing of the characters to the inch.

Another feature of the new Vari-Typer is the vertical carbon ribbon attachment, which feeds a new section of carbon for each impression, giving clear, sharp copy which can be used for photo-offset reproduction or direct-to-plate duplication.

Among the conveniences included in the new model are a paper table for erasures and stencil light, with a switch on the keyboard.

RYAN NAMED ASSISTANT TO PRESIDENT OF ROYAL

Announcement is made of the appointment of Fortune Peter Ryan as assistant to the president (Maxwell V. Miller) of the Royal Typewriter Company, New York. Mr. Ryan joined the company's New York sales department in 1934,



Fortune Peter Ryan

subsequently serving in the standard machine sales department as assistant to the vice president in charge of sales. He enlisted in the army in 1942 and was commissioned a second lieutenant in the Air Corps. Upon discharge he held the rank of captain. He returned to Royal's general sales department in November 1945.

WARN AGAINST COUNTERFEIT AUTOMOTIVE PARTS

Counterfeit replacement automotive parts packaged in boxes imitating nationally known products are now being reported in many sections of the nation.

Royce G. Martin, President of The Electric Auto-Lite Company, world's largest independent manufacturer of automotive electrical equipment, has issued a warning urging all purchasers to examine parts carefully before buying.

"The counterfeiters," Mr. Martin said, "have not only imperfectly copied the parts made by reputable manufacturers, but in many instances have imitated the trade marks and packages in order to sell their goods. We have found counterfeit Auto-Lite parts carefully concealed in cartons that are copies of ours. The only way evil can be eliminated is by having purchasers deal only with representatives of reputable and nationally known manufacturers."



If your desk is a "Rat's Nest"...

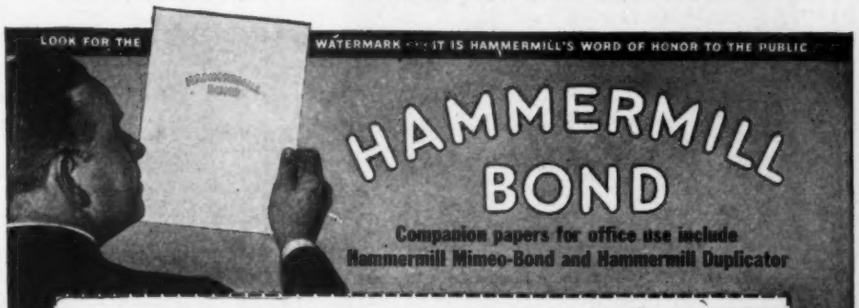


Send for this FREE book!

If your desk seems always to be buried under inquiries, reports, memos, unfinished routine work—let us send you a copy of "Recipe for an Orderly Desk." Thousands of busy men have found it a recipe for an orderly day's work.

It shows how the easy-to-form habit of "putting it in writing" will help clear your desk—keep it clean—and free your mind for the important work. Every one of the suggestions in this book has been tested and proved in practice. Why not try them? Just send the coupon.

And when choosing paper for the forms and letterheads on which efficiency so largely depends, rely on the paper made for business use—Hammermill Bond

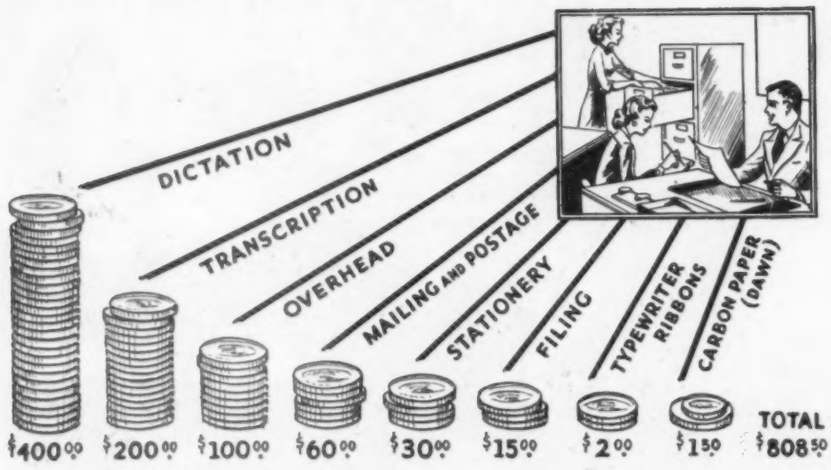


Hammermill Paper Company, 1461 East Lake Road, Erie, Pa. Please send me—FREE a copy of "Very Promptly Yours." (Check here ☐ if you'd like also a sample book of the NEW Hammermill Bond showing its wide range of colors for office printing.)

Name..... Position.....

(Please attach to, or write on, your *business* letterhead) PU-NO

The Cost of 1000 Letters



The accompanying chart is reproduced through the courtesy of the Old Town Ribbon & Carbon Company of New York. The chart indicates that the cost of 1,000 letters from dictation to filing of carbon copies, is approximately $808.50 —a figure that will of course vary. It indicates 40c each for executive's time dictating, 20c each for transcribing, and so on down to approximately 1/6th of a cent for the carbon paper. The cost trend, of course, is up, depending upon the worth of an executive's time and whether his work is done by a secretary or ordinary stenographer.

"DESK OF TOMORROW" IS DESIGNED TO LIGHTEN WORK

The "Desk of Tomorrow," prototype of postwar desks to come, exhibited at the Palmer House, Chicago, Ill., by the Wood Office Furniture Institute, is designed to eliminate much of the troubles of the 'tired business man."

The desk, with expansive flared top, has a built-in electric shaver, so that the executive between interviews can shave thereby avoiding leaving the office with "four o'clock" shadow. It also has a built-in radio, which will bring in the news of the day, or the latest score of the ball game. And the chair accompanying the desk is streamlined in modern style, with soft rubber foam seat and with a clever mechanism that a justs the seat and back to the tilt of the body, but keeps the feet of the executive comfortably on the floor at all times. Both the desk and the chair are adjustable in height, so that long and short men can always be at ease at their work.

Another feature of the "Desk of Tomorrow" is its burn-proof top. A lighted cigarette can be placed on the surface and allowed to burn down to ash without damaging the top.

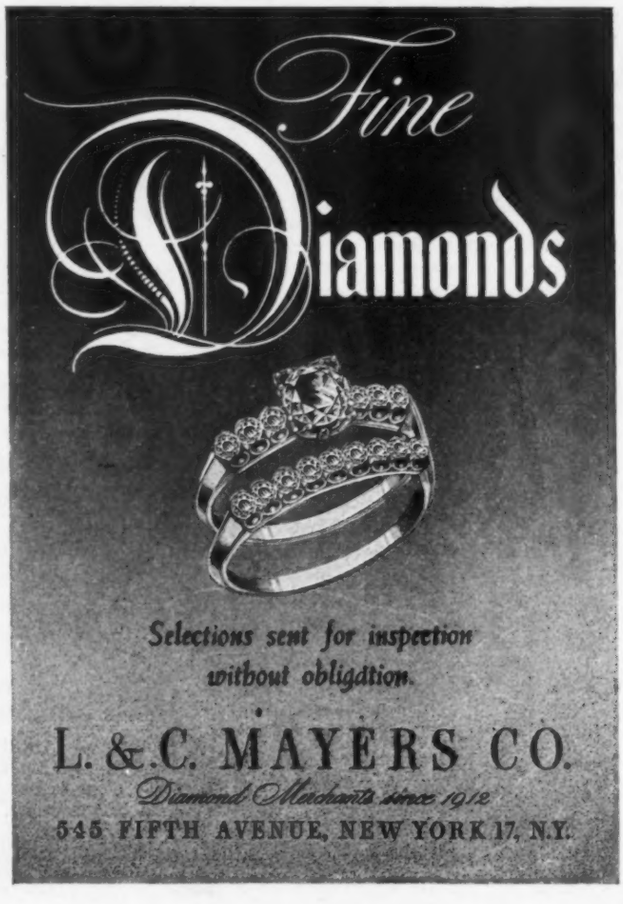
The desk has a built-in automatic device to take dictation. Instead of waiting for a stenographer to primp before coming to take a letter, the executive merely presses a button, talks into the desk, and the letter is dictated without any ado.

The desk has no legs, but rests on runners on either side. This snaps up the appearance of the desk and permits the executive to swivel around in his chair without bumping his toes on desk legs.

The desk is finished in light, quartered walnut, built with curved, tear drop pedestals of molded plywood by methods developed in the manufacture of airplanes during the war. The top is curved, with expansive overhang, so that six persons can seat themselves comfortably around

(*Continued on page* 319)







COLOR PHOTOGRAPH BY UNDERWOOD & UNDERWOOD, N. Y.

"Look What's Happened!"

SEVERAL MONTHS AGO we ran the advertisement shown above. The headline was "You'd be a V.P. if you wuzn't a girl!"

Then we heard from the ladies! From ladies who hoped to be vice presidents, from ladies who *are* vice presidents, from ladies who didn't like the implication that a girl couldn't be a vice president, or a president for that matter.

We're convinced. But we still stick to our original contention that there is a great deal of sense in specifying HOWARD BOND for letterheads and for business forms—in whitest white or in any of the twelve bright, clean colors. And we still believe that the girl who puts her boss next to HOWARD BOND is showing the kind of judgment that wins approval—and advancement.

HOWARD PAPER MILLS, INC. • HOWARD PAPER COMPANY DIVISION, URBANA, OHIO



HOWARD BOND

"THE NATION'S BUSINESS PAPER"



COLOR PHOTOGRAPH BY LE JAREN A HILLER

UNIFORMITY The use of Maxwell Offset simplifies the quest for good results on every printing job. It's *uniform*—its performance on the press is *standardized*.

To the printer, tub-sized Maxwell Offset is the predictable means of presenting the advertiser's story with all the eloquence his ability commands.

Printing sells. The better the printing, the stronger the selling. That's why—to the advertiser, too—Maxwell is a tool for profit.

HOWARD PAPER MILLS, INC.

MAXWELL PAPER COMPANY DIVISION • FRANKLIN, OHIO

Maxwell Offset

For uniformity—in finish, in strength, in ink consumption, in whiteness or color conformity

(*Continued from page* 316)

the desk when the executive wishes to call a conference.

The chair, in matching design with the desk, is of the executive posture type, with novel swivel and posture adjustment mechanism which provides free knee-action with the feet remaing on the floor. The chair casters are semi-enclosed under hoods. Creamy white leather upholstery is used on the chair

The interior of the desk is designed to meet the demands of modern business. The drawers move with an improved "finger tip" action, and special compartments and trays are provided for the systematic organization of the work flowing through the executive's desk. There also is a locked compartment for the personal papers of the executive.

PRESIDENT AND EMPLOYEE MARK 39TH YEAR OF SERVICE



William L. Batt, president of SKF Industries, Inc., and Miss Anna Fitzgerald, supervisor of stationery stores for the ball and roller bearing firm, check an important date on the calendar — the 39th anniversary of their employment. That makes them the oldest SKF employees in point of service. Mr. Batt, wartime vice chairman of the War Production Board, went to work for SKF October 1, 1907. Miss Fitzgerald reported a week later.

IRVEN DAVIS JOINS ALLEN BUSINESS MACHINES

Irven Davis has been named assistant to Vice President Kenneth P. Phelps of the R. C. Allen Business Machines, who is also branch manager of the New York District office of the Grand Rapids company. Previously Mr. Davis had been with the Manufacturers Trust Company, New York, for 10 years. Prior to that he was associated with the adding machine industry for over 25 years.

OFFICE STAND AND DESK TRAY CATALOG

Four-page catalog covering its steel utility stands with Masonite and wood tops, and "Add-A-Tray" all steel desk tray, has been issued by Maso Steel Products, 418 South Clinton St., Chicago, Ill.



ME AND MY BOSS ARE LIKE THAT!

Ever since we switched to Flavor-Seal Shepco Envelopes I have a new regard for stationers and printers, too, especially for the smart supplier who sold the boss these superior envelopes with the delicious double mint flavor. He's as pleased as I am, and you should see the difference in the way the mail goes out.

Anyone who takes the "Taste Test" with Flavor-Seal will never go back to envelopes that taste like varnish. Shepco Envelopes are made from strong, high quality paper, and are in the best of taste.

Shrewd stationers and printers can increase their profits by supplying Shepco Flavor-Seal Envelopes that appeal to secretaries and executives in the same degree.

you can TASTE the difference!

Sheppard ENVELOPE CO.

Number 1, Envelope Terrace, Phone 2-4674

WORCESTER 4, MASS.

PERSONALITIES *in the* NEWS

Clinton C. Forster has been appointed Purchasing Agent for the Champion Motors Company, a newly organized



C. C. Forster

subsidiary of the Flour City Ornamental Iron Company, for the manufacture of the Champion line of outboard motors, with plant and office at 1433 Stinson Boulevard, Minneapolis, Minn. Mr. Forster has been identified with the parent company since April 1942, first in the accounting department and later in the purchasing and expediting departments. With the organization of the new division, he was placed in charge of the entire procurement and expediting program of that division which he now continues in his official capacity as Purchasing Agent. He is a graduate of the University of Minnesota with a B.S. degree in business administration.

E. J. Galdabini has been promoted to the position of Purchasing Agent for the Perfex Corporation, manufacturers



E. J. Galdabini

of industrial radiators and automatic temperature controls, Milwaukee, Wis. Walter Quade has been named Assistant Purchasing Agent. Mr. Galdabini, a graduate electrical engineer from Notre Dame, joined Perfex ten years ago as an assistant sales manager of the controls division. Early this year he was named manager of factory sales.

George E. Tate, Purchasing Agent for the Federal Foundry Supply Company, 4600 East 71st Street, Cleveland, Ohio, has been promoted to Assistant Treasurer and Director of Purchases. He started with the company in 1926 as office boy. In August 1940 he was named Purchasing Agent.

Wm. Cook has been named Purchasing Agent of the Cleveland Cap Screw Company, 3500 East 79th Street, Cleveland Ohio. He has been with the company 14 years, and previously was sales manager of the company's Aircraft and Alloy Products Division, now discontinued

Melvin G. Peterson has been appointed Purchasing Agent for S. B. Penick & Co., producers and manufacturers of botanical drugs and medicinal chemicals,



M. G. Peterson

50 Church Street, New York. He had been connected with the purchasing staff of the Firestone Tire & Rubber Co., Akron, Ohio, for many years. A graduate of Kansas State College, he entered the Armed services in May 1941 as 1st Lieutenant and was progressively advanced to the grade of Lt. Colonel. During this time he was assigned to the Office of the Chief of Ordnance, Washington, D. C., where he was in charge of procurement activities and accounting.

Louis C. Parrott, Assistant Purchasing Agent, Jones & Laughlin Steel Corporation, Cleveland, recently retired. He has been active in purchasing circles for more than 40 years, and is a charter member of the Purchasing Agents Association of Cleveland, and one of the first directors of the N.A.P.A. Incident to his retirement, all purchasing will now be handled by the company's Pittsburgh office.

Evan R. Wheeler has been named Acting General Purchasing Agent of the Western Union Telegraph Company, New



Evan R. Wheeler

York, succeeding Charles S. Voorhees, General Purchasing Agent, who has retired after more than half a century of service in the communications industry. Mr. Voorhees entered the industry in 1895 with the Western Electric Company and became the General Purchasing Agent of Western Union in 1920. He established the Western Union Purchasing Department which was augmented by the Stores Department in 1939. Mr. Wheeler entered Western Union's engineering department in 1917 and participated in the improvement and development of ocean cable equipment, telegraph ticker systems and landline automatic telegraph equipment. He was ap-



Charles S. Voorhees

pointed Assistant General Purchasing Agent in 1940. A native of Oakland, Me., Mr. Wheeler received his degrees of Bachelor of Science and Master of Arts at Colby College and his degree of Bachelor of Science in Electrical Engineering from M.I.T.

A. V. Davies has been appointed Manager of the Purchasing Department of

(*Continued on page* 322)

When the call is for Steel— look to the

Symbol of Service

UNITED STATES STEEL SUPPLY COMPANY
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WHATEVER your steel requirements may be, you can depend on us to give you the best possible service. Our nine conveniently located warehouses try at all times to carry adequate, well-balanced stocks to fill your needs, and our engineers are available to help you solve problems of steel selection, application and fabrication.

When you need steel—Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Alloy Steel, Stainless Steel, Tools, Machinery, etc.—get in touch with our nearest warehouse. You're assured cheerful, thorough and quick attention.

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BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42	STAdium 9400
CLEVELAND (14)	1394 East 39th St.	HEnderson 5750
MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045	Mitchell 7500
NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479	Bigelow 3-5920 REctor 2-6560, BErgen 3-1614
PITTSBURGH (12)	1281 Reedsdale Street, N. S.	CEdar 7780
ST. LOUIS (3)	21st & Gratiot St., P. O. Box 27	MAin 5235
TWIN CITY	2545 University Ave., St. Paul (4), Minn.	NEstor 7311

UNITED STATES STEEL

(*Continued from page 320*)

the Moore & Handley Hardware Company, Birmingham, Ala., succeeding former Purchasing Agent Nesbit who has been named Acting Sales Manager.

J. D. Hogg, formerly Purchasing Agent for the Montreal Engineering



J. D. Hogg

Company, Montreal, Can., has been appointed Purchasing Agent of the Cleveland Electric Illuminating Company, 75 Public Square, Cleveland, Ohio, succeeding W. H. Hartman, retired, who was Purchasing Agent for 46 years, and the company's senior employee in years of continuous service.

Mr. Hartman came to the company in 1900. Under his supervision the purchasing department grew to ten times the size of the two-man staff which handled all purchases at that time; and he can recall the time when the company purchased supplies by the pound rather than by carload lots. He is a charter member of the company's Men's Welfare Association and of its Quarter Century Club.

Mr. Hogg, a native of Canada, is 35



W. H. Hartman, Retired

years old, and is a mechanical engineering graduate of the University of British Columbia.

E. Glenn Martin has been named Purchasing Agent for Dallas County, Dallas, Texas.

F. W. Schuster succeeds T. L. Hawley, retired, as Purchasing Agent for U. S. Steel Products, Beaumont, Texas.

John Cox succeeds Henry H. Hewett, Jr., as Purchasing Agent for the Steel Tank & Pipe Co., Portland, Ore. Mr. Hewett has become a sales engineer for the firm.

Bruce Gadway has been appointed head of the purchasing department of Higgins & Burke, Ltd., Toronto, Ont.

E. A. Russell has been appointed General Purchasing Agent of the Studebaker Corporation of Canada Ltd., Hamilton, Ont.

E. S. Tennant has been named Purchasing Agent for Reeves Bros., Inc., Spartanburg, S. C., buying for the following Reeves plants: Fairforest Finishing Co., Saxon Mills and Warrior Duck Mills, of Spartanburg; Mills Mill No. 2, of Woodruff; Chesnee division, Saxon Mills, Chesnee; and Grace Cotton Mills Co., Rutherfordton, N. C.

Chester D. Jones has been appointed Purchasing Agent for the new Houston, Texas plant of Diamond Alkali Company, according to W. E. Bittner, Diamond's Director of Purchases. Mr. Jones has been employed in the purchasing department of the company's general offices



C. D. Jones

in Pittsburgh, Pa. He served three years as a pilot in the Army Air Forces, European theater, and was discharged in November 1945. Mr. Jones' office will order construction materials and equipment as well as process and operating equipment required for the new plant, contractors for which are Brown & Root, Inc. of Houston.

E. Howell Hickman has been named Assistant Purchasing Agent of Theo. Ulmer, Inc., jobbers of Hardware, industrial, ship and contractors supplies and mechanical rubber goods, Richmond St. and East Columbia Ave., Philadelphia, Pa. He succeeds Charles A. Noll, deceased.

Guy E. Davies has been named Purchasing Agent for The Collins Company, manufacturers of edge tools, steel plows, etc., Collinsville, Conn. He succeeds A. I. Johnson, retired, who had been with the company 23 years, holding the post of Purchasing Agent for the past 18 years.

Hibbard O. Ball has been named Purchasing Agent for the Pitman-Moore Company, Division of Allied Laboratories, Inc., Indianapolis, Ind., succeeding Mrs. Gertrude M. Long, deceased. Mrs. Long had been with Pitman-Moore 36 years.

John J. Guth is now handling Purchasing activities for the S&W Construction Company, Memphis, Tenn. Charles M. Fletcher, former Purchasing Agent, passed away in June.

H. R. Lester succeeds Carl Glass, resigned, as Purchasing Agent of the Buckeye Incubator Company, Springfield, Ohio. He formerly was Assistant Purchasing Agent, and is succeeded in that position by D. S. James. Mr. Lester joined the company in March 1943, becoming a member of the accounting department, and was transferred to the purchasing department in February of this year.



H. R. Lester

F. P. Johnson of Falling Spring, Va., has been named Purchasing Agent and engineer by the Allegheny County Board, Covington, Va.

Frank M. Reinhold has been named Purchasing Agent for the Connecticut Light & Power Company, Waterbury, Conn. He succeeds H. S. Platt, retired.

MAJOR MEREDITH POOLE

Major Meredith Poole, Purchasing Director for E. C. Atkins & Company, Indianapolis, Ind., passed away at his



home in Indianapolis the early part of October. He had been with the company 46 years. His first job with Atkins was as a laborer putting wooden plugs in crosscut saw handles. Working through various departments, including cost and purchasing, he was appointed steel purchasing agent in 1920. In 1940 he was elected to the board of directors and appointed Director of Purchases. In 1945 he was presented with a diamond-studded merit award and award certificate by the company for the important part he had played in its growth. He had been president of the Atkins Savings and Loan Corporation since 1940.

(*Turn to page 324*)

SERVING YOU THROUGH SCIENCE

What Do You Look for When You Buy Truck Tires?



QUALITY? U. S. Royal Fleetways are *quality-controlled* from raw materials to finished product. And it's *quality* that delivers dependable, day-after-day performance.

STRENGTH? From its rugged carcass to its wear-resisting tread, every U. S. Royal Fleetway is a tough, sturdy tire that stands up under the severest usage.

RECAPABILITY? U. S. Royal Fleetways are so *tough* they can be recapped again and again. And with USCAP—the "U. S." controlled system of recapping—you'll get *better* recaps.

LOWER COST PER MILE? *Plenty* of extra miles, at *less cost per mile*, go with every U. S. Royal Fleetway —especially through the facilities of U. S. Fleet Service.

CHECK YOUR U. S. TIRE DISTRIBUTOR *NOW!*

U. S. ROYAL *Fleetway*

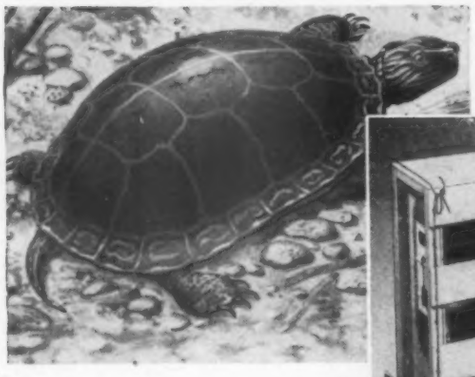
HAS THEM ALL!

U.S. ROYAL *Fleetway* TIRES

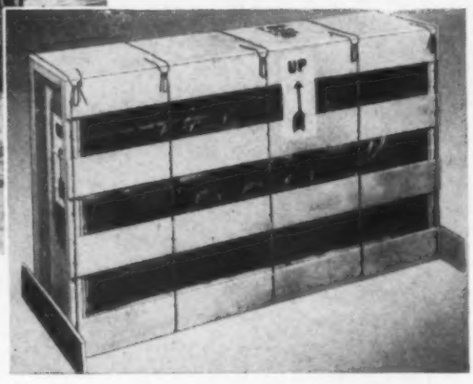
UNITED STATES RUBBER COMPANY

1230 AVENUE OF THE AMERICAS • ROCKEFELLER CENTER • NEW YORK 20, N. Y.

THE CONTAINER IS "PART OF THE PRODUCT"



. . . NATURALLY

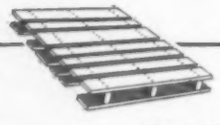


GENERALLY. . . .

NEW

"GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.



"Generalift" Pallet

Turn to the Turtle for another good example of real "Part of the Product" protection. GENERAL Engineered Shipping Containers are also designed specially for the product. There are many advantages that are important to you . . . and to the profit side of your production picture.

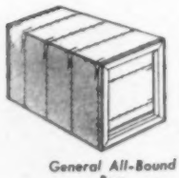
They're compact—no space is wasted. More GENERAL boxes to the load or box car. They're light, yet extra strong—no weight is wasted. GENERAL containers are easier to handle, more economical to ship. They're quickly and easily assembled.

Further, frequently the GENERAL Engineered Shipping Container and the product come down the conveyor line together—as a unit. Result: increased production, reduced man-hour costs.

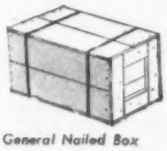
We will be glad to help you too with your packing problems. Write today for more information.



General Corrugated Box



General All-Bound Box

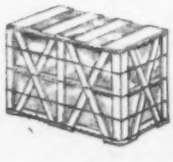


General Nailed Box

Write today for your free copy of booklet on GENERAL'S *"Part of the Product" Plan.*



General Cleated Corrugated Container



General Wirebound Crate

ENGINEERED SHIPPING CONTAINERS

***General* BOX COMPANY**

GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

G. B. O'Meara is now Purchasing Agent for Howard Paper Mills, Inc., Division of Howard Paper Company, Urbana, Ohio.

H. R. Ray, General Purchasing Agent, Fred Harvey Company, Chicago, has been elected a vice president and director of the company.

Frank A. Maley has joined the Bell Aircraft Corporation, Buffalo, N. Y., as Purchasing Agent, succeeding Hugh A. Holmberg, resigned. Mr. Maley was formerly associated with the Curtiss-Wright Corporation.

Russell S. Matthews, Purchasing Agent and office manager of the Alexander Hamilton Institute, New York, has been elected to the board of directors of the school.

AMONG THE COMPANIES YOU BUY FROM

General Detroit Corp., Chicago office: Gail Rutledge has been appointed Midwestern regional sales manager with headquarters at 607 West Washington Blvd., Chicago. Mr. Rutledge will supervise sales in the states of Illinois, Wisconsin, Minnesota, and South Dakota. Mr. H. J. O'Neill succeeds him as assistant to the vice president and coordinator of national accounts.



G. Rutledge



H. J. O'Neill

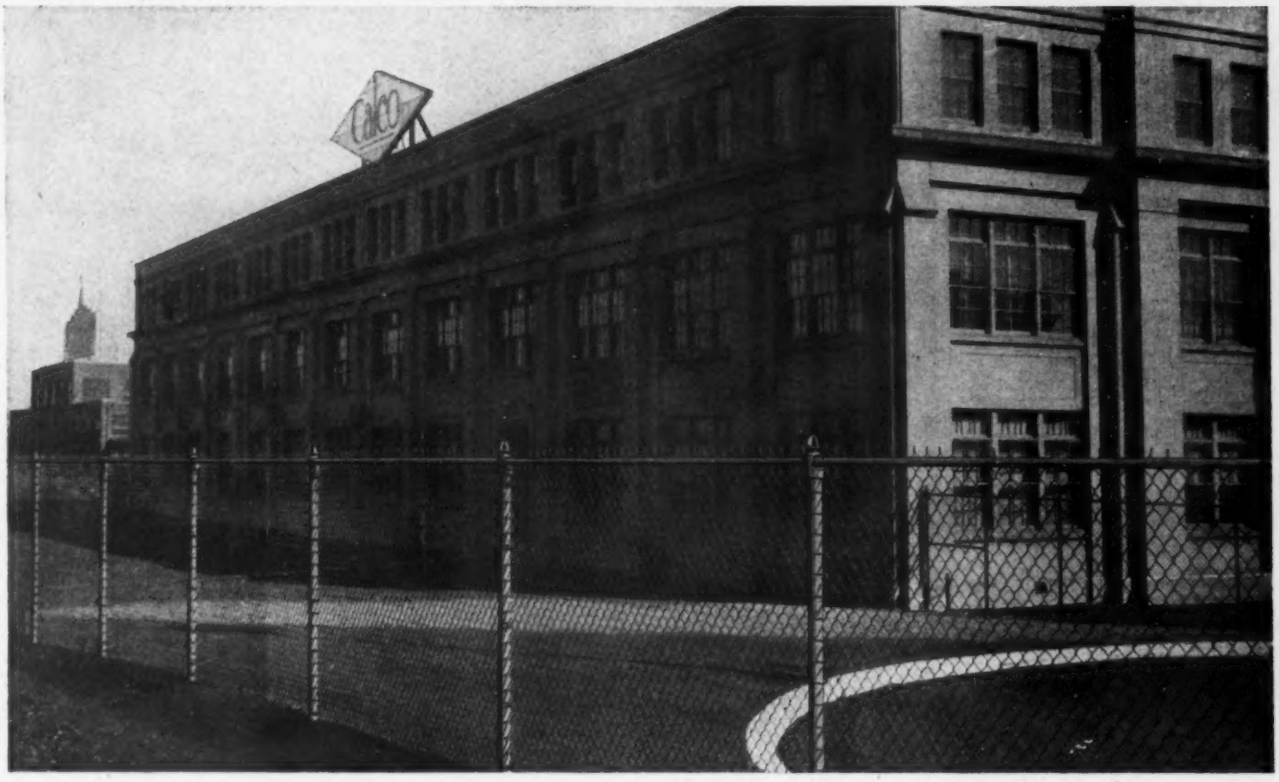
Whiting-Adams Co., New York, New Jersey territory: Harry A. Gates ha been named sales representative in Central & Eastern New York State, Northern New Jersey and Metropolitan New York.

Carpenter Steel Co., Kenilworth, N. J. P. L. Coddington has been appointed manager of sales for Welded Alloy Tube Division. J. A. Dietrich has been named assistant manager of the division

E. I. DuPont de Nemours and Co., Hollywood, Calif. office: M. A. Hatfield has been named branch manager of the newly opened office of Photo Products Department at 6656 Santa Monica Boulevard. H. A. Gladden has been appointed district x-ray sales manager and A. H. Bertholf will be district trade sales manager for the Photo Products Department. Mr. Bertholf, who will handle

(*Continued on page 326*)

ANCHOR FENCE HAS PROTECTED CALCO CHEMICAL FOR 30 YEARS!



Write today for your free copy of the Anchor Industrial Fence Catalog showing diagrams and photographs of industrial installations. Anchor Fence Division, Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Md.



SEND FOR THIS BOOK!

Relocation of Fence to Meet Plant Growth Simplified by Exclusive Anchor Method

Since 1916 . . . through two wars . . . Anchor Chain Link Fence has helped guard the Bound Brook, N. J., plant of Calco Chemical Division, American Cyanamid Company. From time to time, as Calco's facilities grew in size, the original fence was removed, repaired, reset, added to. Yet today, the Anchor installation still maintains its excellent alignment . . . still protects against trespassers, snoopers and trouble-makers.

FOUR exclusive Anchor features have built this record at Calco . . . and they'll give the same protection to your plant. 1. *Deep-Driven Anchors,* which hold the fence permanently erect and in line, in any soil, in any weather . . . yet permit easy relocation when necessary. 2. *Square Frame Gates,* amazingly free from sagging and warping. 3. *U-Bar Line Posts* of carbon steel, rigid and rust-free because their open construction is self-draining. 4. *Square Terminal Posts,* which increase strength, add durability and improve appearance.

For additional information on Anchor Fence . . . diagrams, fencing ideas, photographs of well-known plant installations . . . send for our factual Industrial Fence Catalog. Or ask for one of our experienced engineers to call and give you the benefit of his knowledge in solving your plant protection problems.

Anchor Fence Division, Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Maryland

Anchor Fence

Nation-wide Sales and Erecting Service



WASHERS
STANDARD AND SPECIAL

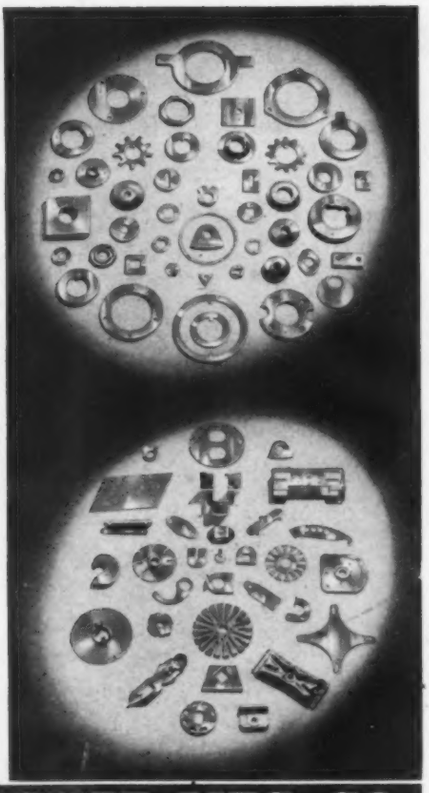
Every Type
Every Material
Every Purpose
Every Finish

Over 22,000 Sets of Dies

STAMPINGS
OF EVERY DESCRIPTION

Blanking
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Let us quote on your requirements.



WROUGHT WASHER MFG. CO.
THE WORLD'S LARGEST PRODUCER OF WASHERS
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REG. U.S. PAT. OFF.
HY-PRO TAPS
For High Production

HY-PRO precision taps produce consistently more threaded pieces to lower your tapping costs. Their extra hardness and durability result in longer life, greater accuracy, more wear between sharpenings.

Send for catalog on company letterhead



Send in your Tapping Problems. Our Engineering Staff will give them careful study and recommend the best solution.

HY-PRO TOOL CO.
New Bedford, Massachusetts. U.S.A.

(*Continued from page* 324)

the sale of photographic papers. films, and chemicals, will make his headquarters in the Defender-DuPont office at 1135 South Flower Street, Los Angeles.

B. F. Goodrich Co., Denver, Colo. office: J. R. Thompson has been named district manager of the Industrial Products Sales Division.

Graybar Electric Company, Detroit office: Edward R. Yonkers has been promoted to the position of Wolverine district



manager with headquarters in Detroit. He succeeds Mr. A. R. Maynard, who has retired after over 40 years service with the company.

Minneapolis Honeywell Regulator Co., Minneapolis, Minn. T. S. Carley has been promoted to sales manager of the wholesale division. Mr. Carley replaces L. C. Johnson who has been named Milwaukee branch manager for the company.

Joseph T. Ryerson and Son, Inc., Los Angeles Plant: Frederick A. Purdy has been appointed manager of the new plant, and T. L. Kishbaugh has been



F. A. Purdy T. L. Kishbaugh

named assistant manager. Geo. W. Gilliland, who has been in charge of the company's Los Angeles office, will continue in a sales capacity. Other members of the field sales staff are: John Fennie, Harold Christian, Richard Deland, Merle Anderson, Milford Tiner and Ernest Lindgren.

Sawhill Manufacturing Co., Philadelphia, Pa. office: Albert A. Bauer has been appointed district representative with headquarters in the Fidelty-Philadelphia Building.

Stokerunit Corp., Pittsburgh district: Voss Machinery Co., 2882 West Liberty

(*Continued on page* 328)

HARSHAW'S *single nickel salts*

COST NO MORE THAN THE OLD, LARGE TYPE



Size meets screen specification of thru 4 on 32 mesh.

● Many platers are surprised when they learn Harshaw's Single Nickel Salts cost no more than the old large type. It's true . . . when you order Harshaw Single Nickel Salts . . . you get uniformly small $NiSO_4 6H_2O$ crystals, far superior to the old kind. These new type crystals of high purity dissolve rapidly and flow freely. Contact the Harshaw branch nearest you for more information, or for prompt attention to your order.

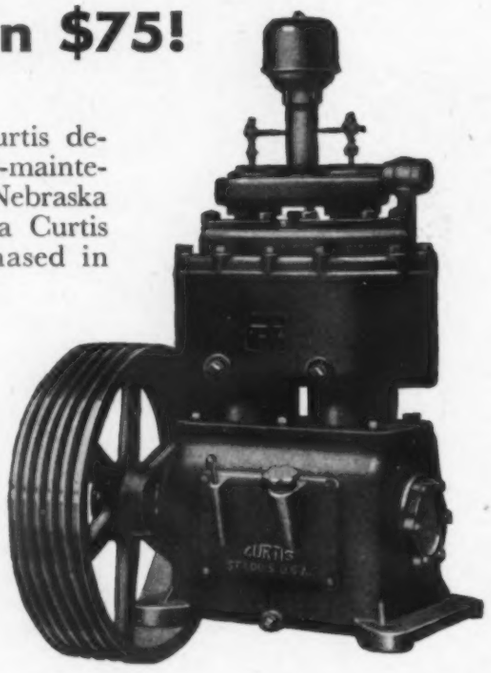
NEW SHIPPING PACKAGE—This new type of nickel salts now makes possible the use of strong 5-ply paper bags containing 100 lbs. net. They are easy to handle and stack conveniently. The crystals pour in a free flowing stream.



THE **HARSHAW CHEMICAL** CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

CURTIS
AIR COMPRESSOR
Operates 14,000 Hours with Maintenance of Less than $75!

Here's proof of Curtis dependability and low-maintenance expense. A Nebraska user writes about a Curtis Compressor purchased in 1926 that "14,000 hours of operation resulted in an expenditure for repairs, including labor, of less than $75!"



Check these outstanding features

- Timken-bearing equipped
- Carbon-free disc-valves
- Self-oiling — positive-pressure lubrication
- Parts readily accessible and interchangeable
- Electric motor or gasoline-engine driven
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- Precision construction throughout

92 Years of Successful Manufacturing

Also, learn how Curtis Air Hoists offer a faster and smoother performance of hoisting, lowering, pushing or pulling.

CURTIS PNEUMATIC MACHINERY DIVISION
of Curtis Manufacturing Company
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CURTIS PNEUMATIC MACHINERY DIVISION of *Curtis Manufacturing Company* F-515
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Please send me Bulletin C-7 on Curtis Air Compressors and Curtis Air Hoists.
Name .....
Firm .....
Street .....
City ..... Zone ..... State .....

(*Continued from page* 326)

Ave., Pittsburgh, has been named distributor in the Western Pennsylvania, West Virginia, Eastern Ohio and Western Maryland area.

Republic Steel Corp., Berger Manufacturing Division, Canton, Ohio. J. W. LeRoy has been appointed manager of Special Products sales.

Oakite Products, Inc., New York, N. Y. J. C. Leonard has been appointed sales manager of its Industrial Marketing



Division. Mr. Leonard will direct the marketing and servicing activities of the industrial field staff.

Curtis Lighting, Inc., New Orleans territory: Hutson Colcock has resumed his duties as field representative after five years in the Navy.

McKay Company, Pittsburgh, Pa. Harold N. Ewertz has been named sales manager of the Electrode Division. Mr



Ewertz, during the war, served in U. S. Army Service Forces, Ordnance Department, Ferrous Metallurgical Advisory Board Subcommittee on Welding Armor.

B. F. Goodrich Chemical Co., Boston office: W. D. Lahey and J. J. Breen have been named sales representatives for Geon thermoplastics in newly established sales office in the United Shoe Machinery Company Building, 140 Federal Street, Boston. Their headquarters were previously in New York City.

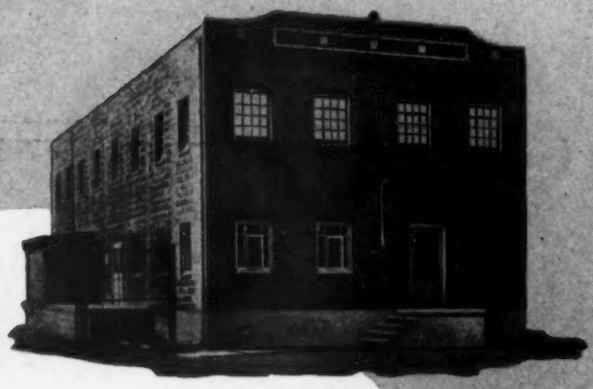
Wrought Washer Manufacturing Co., Milwaukee, Wis. Walter F. Borges has been appointed sales manager to succeed the late William F. Disch. He will also be in charge of advertising.

Carrier Corporation, Syracuse, N. Y. Arthur P. Shanklin has been elected

(*Continued on page* 332)

JESSOP

MALTA CARBIDE *and* T & V CAST ALLOY



are made here

Our new building for the manufacture of JESSOP "Malta" carbide and "T and V" cast alloy tools, dies, and wear resisting parts is a compact, highly functional unit which contains the latest production equipment. Engineering, production, and sales are closely coordinated under one roof for most efficient service.



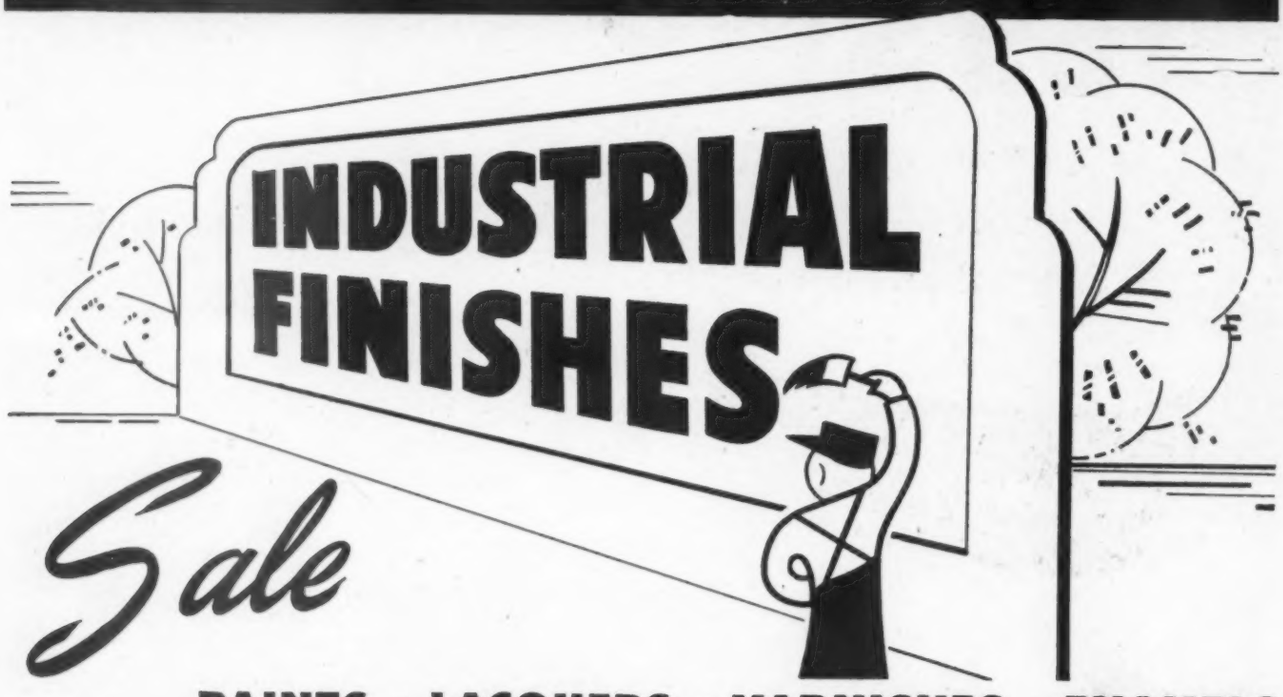
are fully described here

Our new 24-page catalog, just off the press, contains illustrations, and complete specifications for JESSOP standard "Malta" carbide-tipped tools, tool tips, carbide inserted wire drawing dies, and "T and V" cast alloy tool bits. Also illustrated are "Malta" carbide form tools, dies, and wear resisting parts. Write today on your business letterhead for your copy.

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WASHINGTON, PA.

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PAINTS • LACQUERS • VARNISHES • ENAMELS

INDUSTRIAL FINISHES

METAL PRIMERS	
Zinc Chromate Primer Spec. AN-TT-P-656	$1.20 per Gallon
Zinc Chromate Primer Spec. 52-P-18	1.00 per Gallon
Synthetic Primer for Ferrous Metals Spec. 3-171	.65 per Gallon
Lacquer Resistant Synthetic Primer Spec. 3-183	.65 per Gallon
Synthetic Refinishing Primer Spec. 3-172A	.65 per Gallon
PIGMENTED LACQUER	
Lustreless Lacquer Spec. 3-162 (This price applies to all colors except Olive Drab)	$ .50 per Gallon
SPECIAL	
All Olive Drab Paints—Lacquers—Enamels (Minimum sale quantity 500 gallons)	$ .30 per Gallon
ACID PROOF BLACK PAINT	
Spec. 3-106-E (useful for many purposes)	$ .16 per Gallon
OLEORESINOUS PAINT SPEC. T-1279	
A Utility Maintenance Paint) Olive Drab, Loam	.30 per Gallon
All other colors	.49 per Gallon

PRICES ARE F. O. B. LOCATION

Although this material has been previously offered to priority claimants, 10 per cent of the merchandise has been reserved to fulfill any further needs of priority claimants including VETERANS OF WORLD WAR II who are invited to contact the Regional Office serving their area.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

Large quantities of good quality protective coatings, now declared surplus, offer you an unusual opportunity to obtain items manufactured to exacting Government specifications. While some types and kinds of protective coatings are in short supply commercially (due to lack of raw materials) . . . there are paint products of all types now in inventory which will be suitable for your present needs at *low prices.*

Your nearest War Assets Regional Office can give you complete information regarding prices, locations, quantities, types and colors available. Special inter-regional service in each Regional Office will provide you with similar information from other Regions.

In addition to paints and enamels for general use, available stocks include many *special* purpose finishes. ACT NOW!

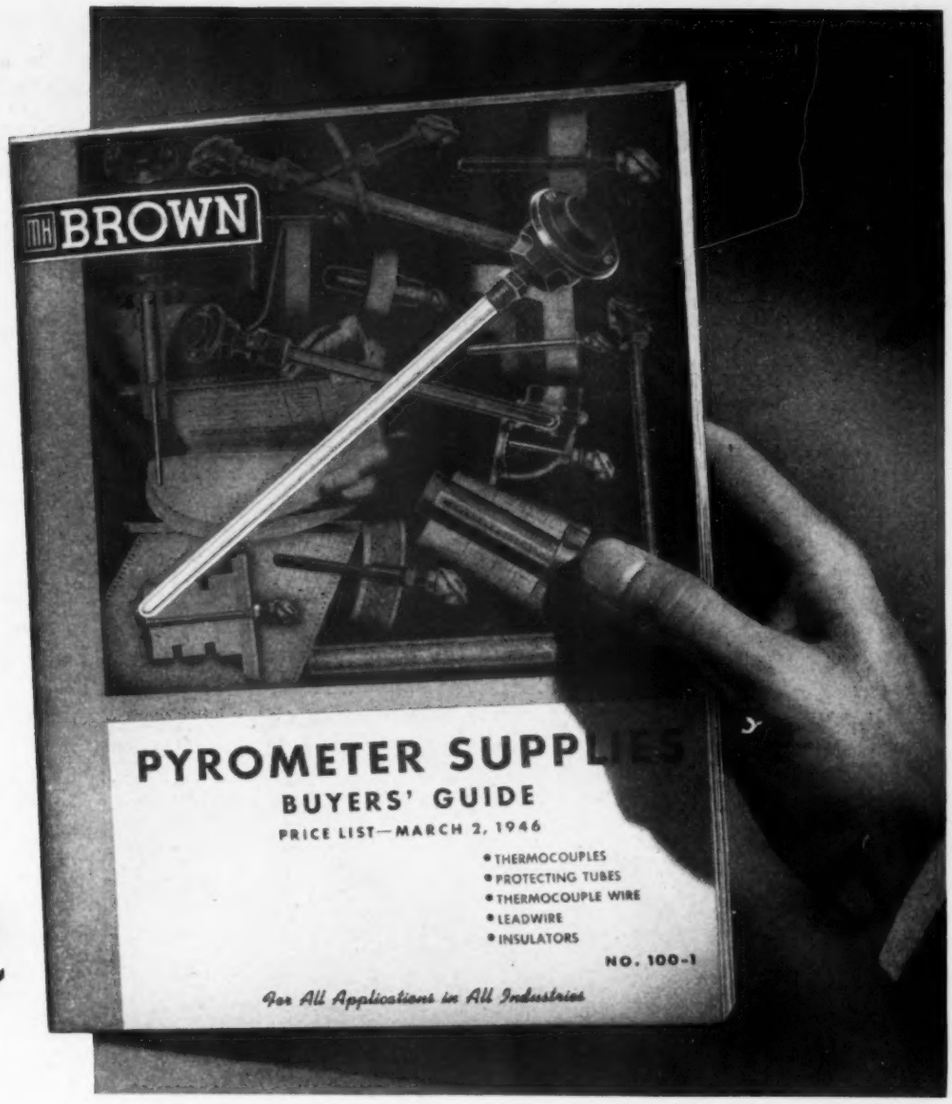
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(*Continued from page* 328)

vice president and general sales manager. Mr. Shanklin will be in charge of all of Carrier's domestic sales activities.

Fairbanks, Morse & Co., Chicago, Ill. James G. Graham has joined the organization as district manager of the Railroad Division with headquarters in Chicago. Mr. Graham will contact railroads in Chicago and the West.

Corbin Screw Division, American Hardware Corp., New Britain, Conn. T. A. Delihant who formerly covered the Michigan, Eastern Indiana, Western Ohio, and Central Kentucky territory has been assigned to the Metropolitan Chicago territory. Weston MacRae has been appointed sales representative in the Northern New Jersey area.

Udylite Corp., Michigan territory: H. J. Ward has been made district manager for the Michigan area. Mr. Ward has



been with the company for the past ten years and during the war spent most of his time in Washington with Army and Navy Engineers on plating problems.

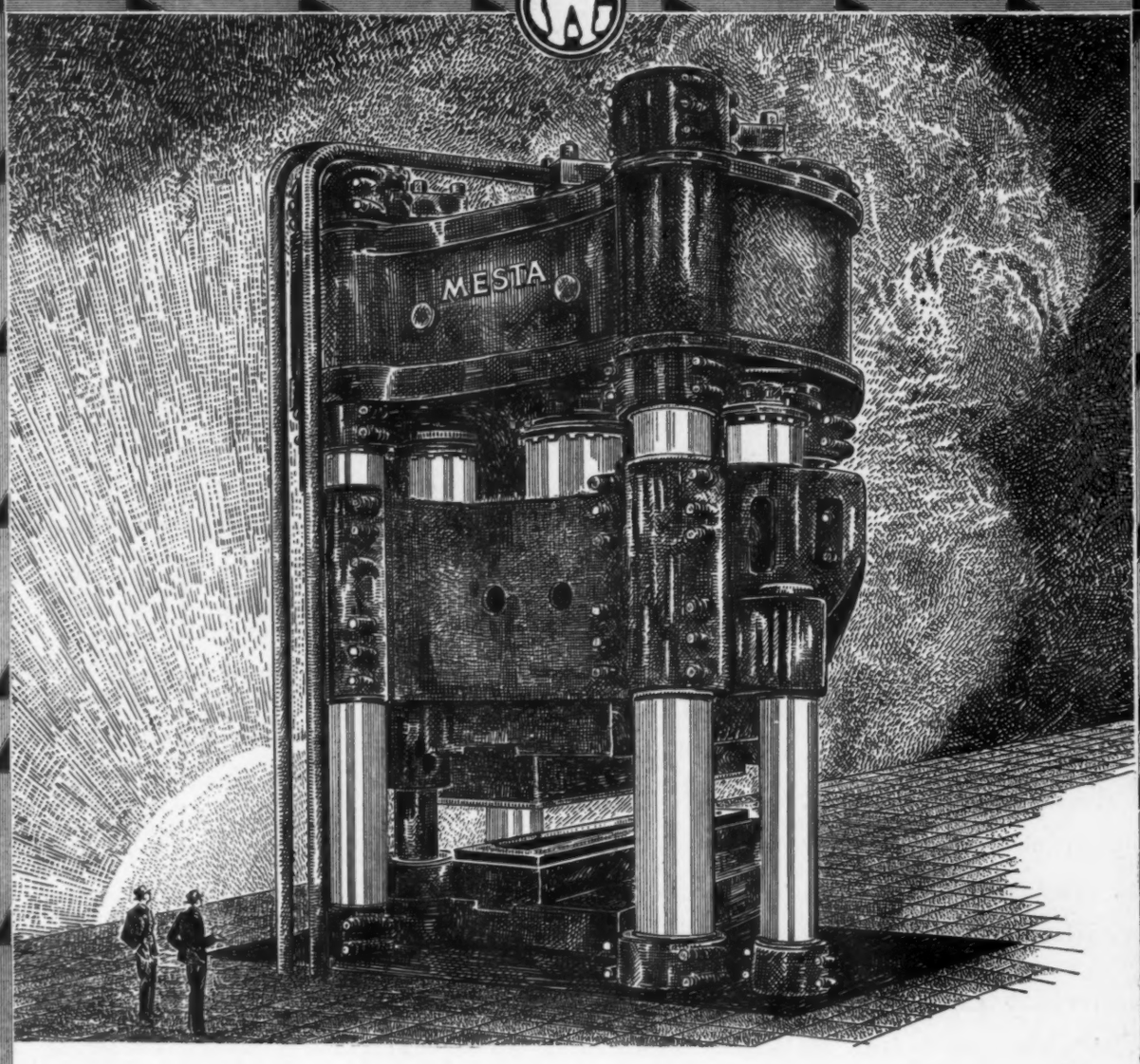
Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J. E. L. Alderson has been appointed field engineer of Oil Field Rubber Products. He will maintain local headquarters at Houston, Texas, but will operate from and as part of the Product Engineering Department at its executive offices, Passaic.

United States Rubber Co., Naugatuck Chemical Division, Naugatuck, Conn. George R. Vila has been named sales manager for latex, Lotol, rubber dispersions and plastic products. Mr. Vila will make his headquarters at the chemical division's plant in Naugatuck and will also maintain an office at the company's general offices, 1230 Avenue of the Americas, N. Y.

Edwin F. Guth Co., Michigan territory: Charles C. Munroe, Dearborn, Mich., has been appointed direct representative in the Michigan territory, and the Toledo, Ohio area.

Jas. H. Matthews & Co., Southwestern District: Announcement is made of the formation of a Southwestern District sales office at 2817 Lovers' Lane, Dallas, Tex., with Walter S. Beecher as district sales manager.

(*Turn to page* 334)



NOW in operation is the new plant of Wyman-Gordon Products Corporation, a wholly owned subsidiary of Wyman-Gordon Company for the account of Reconstruction Finance Corporation, available for experimentation in and for the development and production of light metal forgings. In production here, is the largest die forging press in the world (18,000 tons), that removes present size restrictions on magnesium forgings. This means for aircraft reduced weight which, in turn, means increased pay-load and greater performance for American planes . . . And for industry in general — complete range of magnesium and aluminum forgings.

WYMAN-GORDON
PRODUCTS CORPORATION
WORCESTER, MASSACHUSETTS, U. S. A.

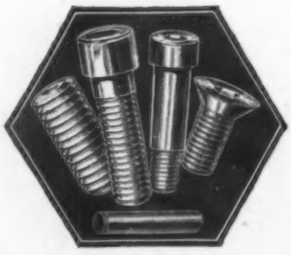


Proofs of Identity

Suppose you place an order for ALLEN Screws and *"Tru-Ground"* Dowel Pins with a local Industrial Distributor. He doesn't happen to be an ALLEN Distributor. He fills your order with Allen-*type* screws — and the dowel pins *look* like "Allens". But you discover a difference in tensile strength, a difference in tolerances, in HOLDING-POWER.

Query: How can you get the exact qualities you want in hex socket screws and in dowel pins? First, by identifying your supplier as an ALLEN Distributor. Second, by identifying the Allen package. If your "Allens" be identified by *name*, then and only then can you expect them to *live up to their name!*

Your supply-source is your nearest ALLEN Distributor, — Master Expediter of orders. He stocks for your all-round convenience a full line of Allen Hollow Screws and Diemakers' Accessories.



The line consists of ALLEN Hollow Set Screws, "Pressur-formd" Socket Head Cap Screws and Flat Head Cap Screws, "Tru-Ground" Shoulder Screws, Square Head Set Screws, Pipe Plugs, "Tru-Ground" Dowel Pins, Tap Extensions.

THE ALLEN MANUFACTURING COMPANY
HARTFORD, ★ ALLEN ★ CONNECTICUT, U.S.A.

Modern Collet and Machine Co., Ecorse, Mich. Henry Hillerman has been made sales manager, and Allen W. Lovell, former sales manager, has been promoted to general manager.

Permutit Co., Washington, D. C. office: John C. Tracey, former Lt. Colonel of the U. S. Army Engineers, has been named sales engineer.

Whiting-Adams Co., Inc., Boston, announces appointment of John A. Hoftyzer as territorial sales representative in Ohio,



Michigan and Western New York. He will handle Whiting-Adams, Star Brush Mfg. Co., and J. C. Pushee & Sons lines of paint brushes.

Kennametal, Inc., Latrobe, Pa., announces establishment of a national organization for selling and servicing Kennametal-tipped mining tools. Offices will be maintained at: Latrobe, Pa., under District Supervisor Robert J. McGinnis; at 95 S. Washington St., Waynesburg, Pa., under Orval Robson; at the Franklin Hotel, Benton, Ill., under Robert A. Thompson: and at P. O. Box 1716, Denver, Colo., under Orville Phipps.

Roots-Connersville Blower Corp., Conners-



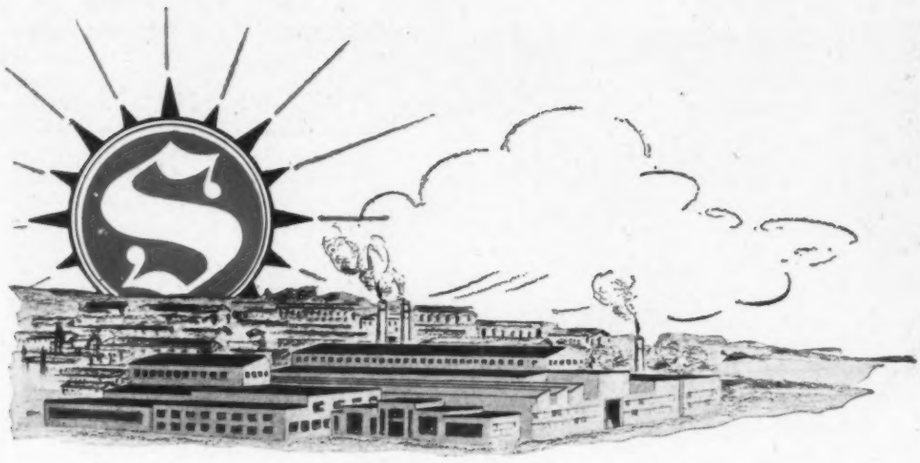
ville, Ind. Ralph R. Newquist has been elected vice president in charge of sales.

Geary Stainless Steel Co., Baltimore, Md., has appointed William R. Thompson, 75 Lemoyne Ave., Washington, Pa., as district manager for Western Pennsylvania, and Edward G. Cressell, 333 N. Michigan Ave., Chicago, Ill., as district manager for Illinois, Indiana and Southwestern Michigan.

Celanese Corp. of America, Chemical Div., New York. New Sales manager is W. Ward Jackson.

Union Steel Products Co., Albion, Mich. L. F. Emigholz has been named sales

(*Continued on page* 336)





FOR MORE THAN 68 YEARS-

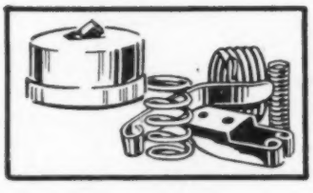
SYMBOL OF SERVICE *to Many Industries*

Seymour Service includes all branches of metal fabrication, touches untold thousands of allied industries. Silver and other plated wares, electrical instruments and appliances, optical goods, jewelry, musical instruments, marine hardware — the list of products served by Seymour alloys is great, and grows constantly greater. Nearly seventy years ago, this company began business, supplying a few thousand pounds of nonferrous alloys a year. Today the output runs into millions of pounds per annum. Brief descriptions follow. We shall be glad to amplify and apply them to your particular problem.



NICKEL SILVER

A wide ductility range makes this the perfect alloy for spinning, drawing and stamping. Its silvery white color makes it an excellent base for silver, nickel and chromium plated ware; eventual wear leaves no unsightly yellow patch. It has the ideal even grain for the acid etching process, being free of "orange peel" effects and other blemishes. When leaded for free cutting, it has unsurpassed workability.



PHOSPHOR BRONZE

Its high corrosion resistance solves most salt water and dampness problems. It has remarkable fatigue properties; in spring form (one of its principal uses) it undergoes hundreds of thousands of flexures without impairment. Such springs have almost endless life! Its extreme toughness makes it a dependable alloy for small bearings. Seymour Phosphor Bronze is also available in welding rods, grades A, C and D.



NICKEL ANODES

Made of virgin nickel in modern electrical furnaces. Casting is done under accurate pyrometric control and careful laboratory check. Special grain structure reduces sludge and loose nickel to a decided minimum. Made in all standard shapes and formulas, or to special order. Seymour Anodes are also made in copper, brass, bronze and zinc.

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NONFERROUS ALLOYS SINCE 1868



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CASTINGS
S.A.E. or A.S.T.M.
Specifications
Class 20 • Class 30
Class 40

Special Facilities
for Rollover — Cope-and-drag production to 150 pounds

Other castings up to 1000 pounds

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CITY
FOUNDRIES CO.
Member Gray Iron Research Institute
2500 West 27th St.
Cleveland 13, Ohio
PHONE PRospect 5040

(*Continued from page* 334)

manager of the company's new pallet division. Company recently went into production on 8-way steel wire pallets.

Ilg Electric Ventilating Co., Chicago, announces election of J. J. Freidler, Jr., Southern district manager, to the board of directors. He has been with the company for over 20 years, having joined them as a salesman in the New Orleans office in 1925.

G. C. Jelliffe, formerly Lieutenant Commander in the Navy, has been appointed assistant to vice president and general sales manager P. D. Briggs in the New York office of Ilg. Keith P. Ribble has been placed in charge of the Houston office, and E. B. Bomar has been named head of the Phoenix office.

Ahlberg Bearing Co., Cleveland office: Herbert C. Petzing succeeds Max Palmer



as manager. Latter has gone into business for himself under the name of Palmer Bearing Co.

John S. Barnes Corp. Chicago Office. E. C. Hawkins has taken over management of the company's Chicago branch office at 1112 Field Bldg.

Monsanto Chemical Co., Merrimac Div., Boston, Mass. F. Faxon Ogden has been named manager of special products sales development and J. J. McCarthy as manager of chemical sales development in charge of new products for the paper and leather industries.

Curtis Lighting, Inc., Detroit territory: Charles H. Burch has rejoined the company, after 5 years of Army service, as sales representative.

Graver Tank & Mfg. Co., Inc., East Chicago, Ind. Willard M. Broxham has been named manager of sales for the fabricated plate division. He formerly was manager of the Philadelphia office.

Container Testing Laboratories, Inc., has opened a new office at 9047 Wilshire Blvd., Beverly Hills, Calif., under direction of Lee M. Smith.

General Detroit Corp. and The General Pacific Corp. Philadelphia. Office has been opened in that city with Elmer A. Marquardt as Zone sales manager at 1427 N. Broad Street.

INDUSTRIAL DEVELOPMENTS

L. S. Starrett Co., Chicago office: Walter W. Haskins has been appointed manager of the branch to succeed the late Albert W. Smith.

American Brake Shoe Co., New York, N. Y. announces that construction has been started on a new plant in Niles, Ohio for the manufacture of railroad journal bearings. When completed, th new plant will be operated by the National Bearing Division which is operating plants in Chicago, Ill.; Pittsburgh, Pa.; Portsmouth, Va.; St. Louis Mo.; St. Paul, Minn.; and Meadville Pa., where a new plant is under construction to replace the present one.

Federal Products Corp., Providence, R. I. have acquired the sole manufacturing rights for the Federal-Metricator Air Gaging system. The manufacturing facilities formerly located at Ann Harbor, Michigan have been transferred to the Federal plant at Providence. Previously Federal had been exclusive national sales agents for the gage, but under this new arrangement it will manufacture, distribute, and service the system. There are now available mechanical, electronic and air gages of Federal manufacture as well as Federal Dial Indicators, to meet requirements of precise dimensional inspection and for Statistical Quality Control work.

General Electric Co., Schenectady, N. Y. announces the purchase from the Reconstruction Finance Corporation of the Ft. Wayne, Indiana plant where the company manufactured turbosuper-chargers during the war. The plant will be used for production of fractional-horsepower motors.

Foxboro Company, Ltd., Montreal, Canada, an affiliate of the Foxboro Company of Foxboro, Massachusetts, has started construction of a new plant on a three and one-half acre site in the



Foxboro's New Montreal Plant

Ville LaSalle section of Montreal. The complete building will be turned over to the owners in the Spring of 1947, ready for occupancy. John H. Bolton continues as manager of the Foxboro Company Limited.

Chase Brass & Copper Co., Waterbury, Conn. announce several important personnel changes incident to expansion programs in Waterbury and in Cleveland, Ohio. W. C. Husted, vice-president in charge of all activities in the Cleve-

(*Continued on page* 338)



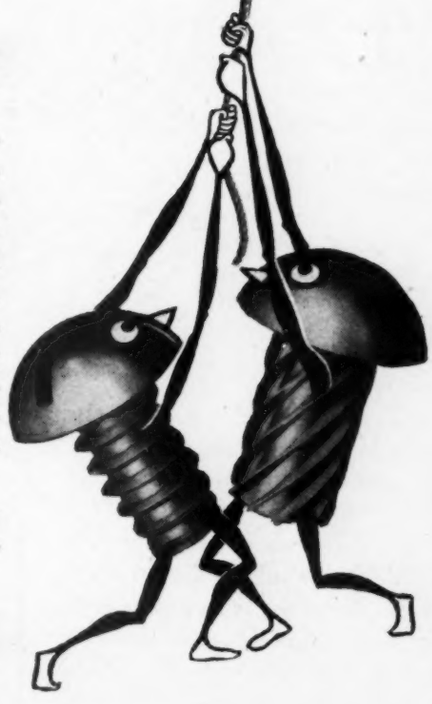
THE *Backlog* THAT BLOCKS YOUR DELIVERIES

Every mail received at Parker-Kalon brings a stack of orders like this, to further swell our backlog which has reached astronomical proportions.

This steadily mounting backlog which far exceeds manufacturing capacity for months to come, besides raw material shortages and the many difficulties which all manufacturers contend with today, has forced us to schedule deliveries of new orders farther and farther into the future.

We are doing everything possible to increase production – to take a bigger "bite" in the backlog each day – to bring back the time when we can say, "We will ship immediately," as we did in the pre-war years. Until then, we ask your continued understanding and patience on P-K Self-tapping Screw deliveries. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

★*GOOD NEWS! Orders for alloy steel* ***P-K SOCKET SCREWS*** *can be shipped without delay.*



P-K PARKER-KALON FASTENING DEVICES



FOR EVERY METAL AND PLASTIC ASSEMBLY

"Toughest Steel Known" Spells Economy in the Toughest Conveyor Service . . . . .

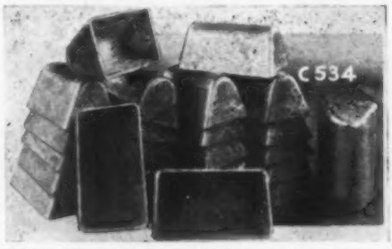
Many heavy duty handling operations impose drastic shock loads and severe abrasive wear on the chain, sprockets and buckets employed.

The toughness and abrasion resistance of austenitic manganese steel are qualities without which such equipment is unnecessarily costly to maintain.

The two most important requisites in elevator and conveyor chain — durability and freedom from breakdown — find their highest development in Amsco Manganese Steel Chain. Having a test-bar tensile strength of 100,000 - 130,000 lbs. p.s.i. and a developed-in-service hardness to 550 Brinell, combined with a touch shock-resisting body-metal, manganese steel chain withstands for long periods abuse that quickly destroys ordinary chain.

Manganese steel sprockets, and idlers too, have an assured service life greater than those of ordinary metal. They add length of life to transmission chains through taking on a smooth polish in operation. In a typical application where gray iron sprockets had to be replaced every few months, Amsco sprockets showed very little wear after three years in service.

Elevator buckets, also, are subjected to severe abrasive action and shock stresses. Amsco Manganese Steel Buckets have effected substantial economies in abusive applications. These buckets can be supplied in standard sizes, plain or punched.



C-534. Manganese steel elevator buckets can be supplied in all sizes in accordance with elevator manufacturers' specifications, plain or punched.

Ask for descriptive Bulletins 742-CN and 842-WS.



C-471. Amsco manganese steel driving sprockets for steel mill transfer table chain.



A-267. Specimen strand of Amsco manganese steel draw-bench chain for tripping dog attachment.

Joliette Steel Limited, Joliette, Quebec, owned by American Brake Shoe Company, produces and sells Amsco Manganese Steel Castings in Canada.

AMSCO

Foundries at
Chicago Heights, Ill.; New Castle, Del.;
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Los Angeles, Calif.; St. Louis, Mo.
Offices In Principal Cities

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS • ILLINOIS

AMERICAN Brake Shoe COMPANY

(*Continued from page* 336)

land area, has been transferred to Waterbury, and placed in charge of organization and plant operations under Vice President Richard D. Ely. J. S. Coe has been elected a vice-president in charge of all activities in the Cleveland area. Richard R. Quay, counsel for the company, has been promoted to assistant secretary.

Mathews Conveyor Co., Ellwood City, Pa. Pacific Coast: Announcement is made that effective October 31st, sales agreement with Mailler Searles, Inc., was terminated, and all sales of Mathews conveyors in the Pacific States and Hawaiian Islands will be handled by the Mathews Conveyor Company West Coast, subsidiary company. Manufacturing Division will remain at 300 Seventh Street, San Francisco until about January 1, 1947, at which time new factory building under construction in San Carlos, Calif., will be occupied. Sales organization will be headed by P. W. Brown of San Francisco. Sales engineering offices will be maintained in Los Angeles, Portland and Seattle. Bay area will be served from the sales engineering office at San Carlos. Thus Pacific Coast sales are placed on a direct company-to-customer basis.



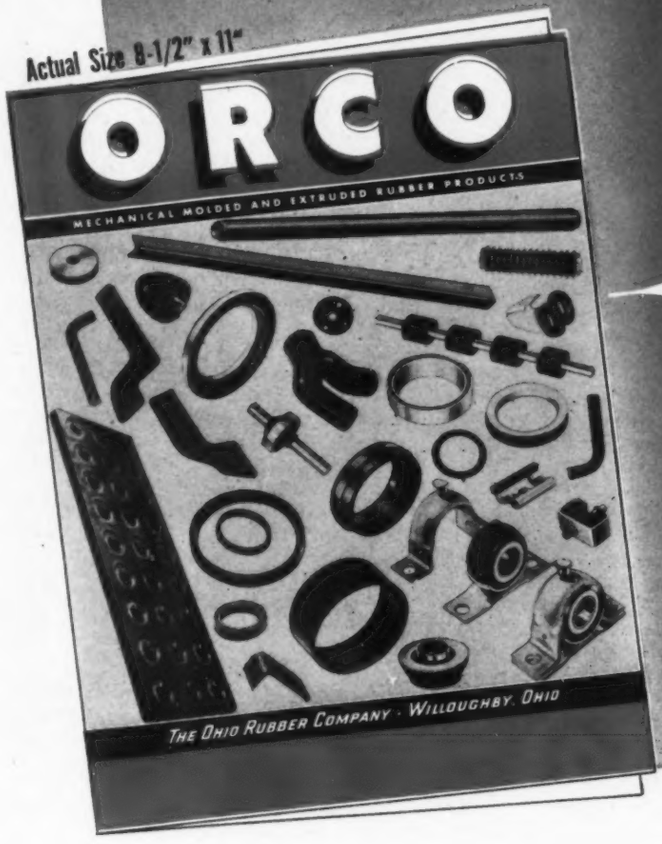
P. W. Brown, Sales Manager, Mathews Conveyor Company West Coast

Heyden Chemical Corp., New York, announces acquisition of a phenol plant in Memphis, Tenn. The plant, located on 68-acre site, was purchased from the War Assets Administration for $1,060,000. It will be managed by C. J. Adams who will direct a $500,000 expansion program.

Jefferson Chemical Company, Inc., Rockefeller Plaza, New York, has been organized by The Texas Company and American Cyanamid Company, to produce chemicals from petroleum and petroleum gases at a plant under construction at Port Neches, Texas. Ethylene

(*Continued on page* 340)

It answers a lot of questions *on rubber & synthetic rubber*



This handy, quick reference guide is boiled down for busy people who may frequently, or only occasionally, seek ready answers to questions on the comparative bonding qualities of rubber and the various synthetic rubbers; their respective physical and chemical properties; and other subjects relating to mechanical molded and extruded parts. Your request for a copy (or copies) will be acted upon promptly. No obligation on your part, of course. Address Mr. W. Miller Cook, The Ohio Rubber Company, Willoughby, Ohio.

THE OHIO RUBBER COMPANY

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Factories: WILLOUGHBY, OHIO • LONG BEACH, CAL. • CONNEAUTVILLE, PA.

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STERLING BOLT CO.

a dependable source for bolts, nuts screws, rivets washers

25th Anniversary 1921-1946

25 YEARS OF SERVICE TO BOLT AND NUT BUYERS

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213 W. JACKSON BLVD.
CHICAGO 6, ILLINOIS
MILWAUKEE—161 WISCONSIN AVE.
CINCINNATI—UNION TRUST BLDG.

(*Continued from page* 338)

glycol and ethylene oxide are among the initial products. Actual production is expected to begin during the summer of 1947. P. M. Dinkins is president of the new company.

Plymouth Cordage Co., Plymouth, Mass. Bartlett B. Bradley has returned to the sales organization in the capacity of general sales manager. He was a lieutenant



in the U. S. Navy, serving for two years in the Supply Division in Washington and later in various Pacific campaigns. Previous to his naval service he was manager of the Eastern Sales District of Plymouth Cordage.

The Pennson Corporation of New York City and Waltham, Mass., announces the purchase of The McIntyre Company of Newton, Mass., manufacturer of high precision industrial hydraulic and water pumps and fluid motors. This is the Pennson Corporation's second acquisition, and it is to be combined with its first purchase, the Waltham Horological Mfg. Co. of Waltham, manufacturers of precision parts.

Pennsylvania Transformer Co., Pittsburgh, Pa. announces acquisition from War Assets Administration, of buildings Nos. 20 and 25 of the Aluminum Forge Plant in Canonsburg, Pa. The new buildings cover approximately 5 acres and will house all manufacturing divisions and many offices of the company. A few departments including the sales department will remain in Pittsburgh.

Maas & Waldstein Co., Newark, N. J. has purchased the Smith-Davis Paint Co., 10751 Venice Boulevard, Los Angeles Calif. This company established in 1923, will continue to manufacture industrial finishes, trade sales and maintenance sales paints. C. R. Parry, Pacific Coast divisional manager will supervise the new plant and will move his present office and the company's warehouse to the new address.

The Permutit Company, New York has acquired the Simplex Valve and Meter Company of Philadelphia. The Simplex Company, manufacturers of equipment for control and regulation of liquid flow will continue to operate under its own name.

Heppenstall Company, Philadelphia office: Formerly in the Drexel Building, new address of sales office is Room 1446, The Broad Street Station Building.

United States Rubber Co., New York, N. Y. has purchased the outstanding common stock of Dispersions Process, Inc., a Delaware corporation. Activities of the subsidiary, which consist of the development and sale of dispersions of rubber, reclaimed rubber, plastics and other rubber-like materials, will be combined with the latex activities of Naugatuck Chemical Division, according to John P. Coe, vice-president and general manager of this division. Sales headquarters will be located at the Naugatuck, Connecticut plants.

Graybar Electric Co., Southwestern district. John E. Fontaine has been named manager at Houston, Texas to replace C. G. Matthews, who has retired after thirty years of service with the company. Lynn A. Haley will take over Mr. Fontaine's position as manager at Beaumont, Texas.

Sterling Bolt Co., Chicago, Ill. D. P. Wertheimer has been appointed sales manager, succeeding J. B. Epstein. For the past six years he has been assistant sales manager.

SKF Industries, Inc., New York district: Harrison Wood has been named district manager with headquarters at 1976 Broadway, New York City. The district embraces New York City, the southern tier of New York state and northern New Jersey.

Whiting-Adams Co., Inc., Boston, Mass., announces resumption of manufacture of pure Chinese hog bristle brushes for the master-painter trade.

Triumph International, Inc. Name of this wholly-owned subsidiary of Noma Electric Corp. has been changed to Noma International, Inc.

Ingalls Iron Works, Birmingham, Ala. Three-story office building is being built to house the executive and administrative



offices of the Ingalls Iron Works Co., The Ingalls Shipbuilding Corp., and Birmingham Tank Co. It will be connected with present two-story administration building by a two-story passageway.

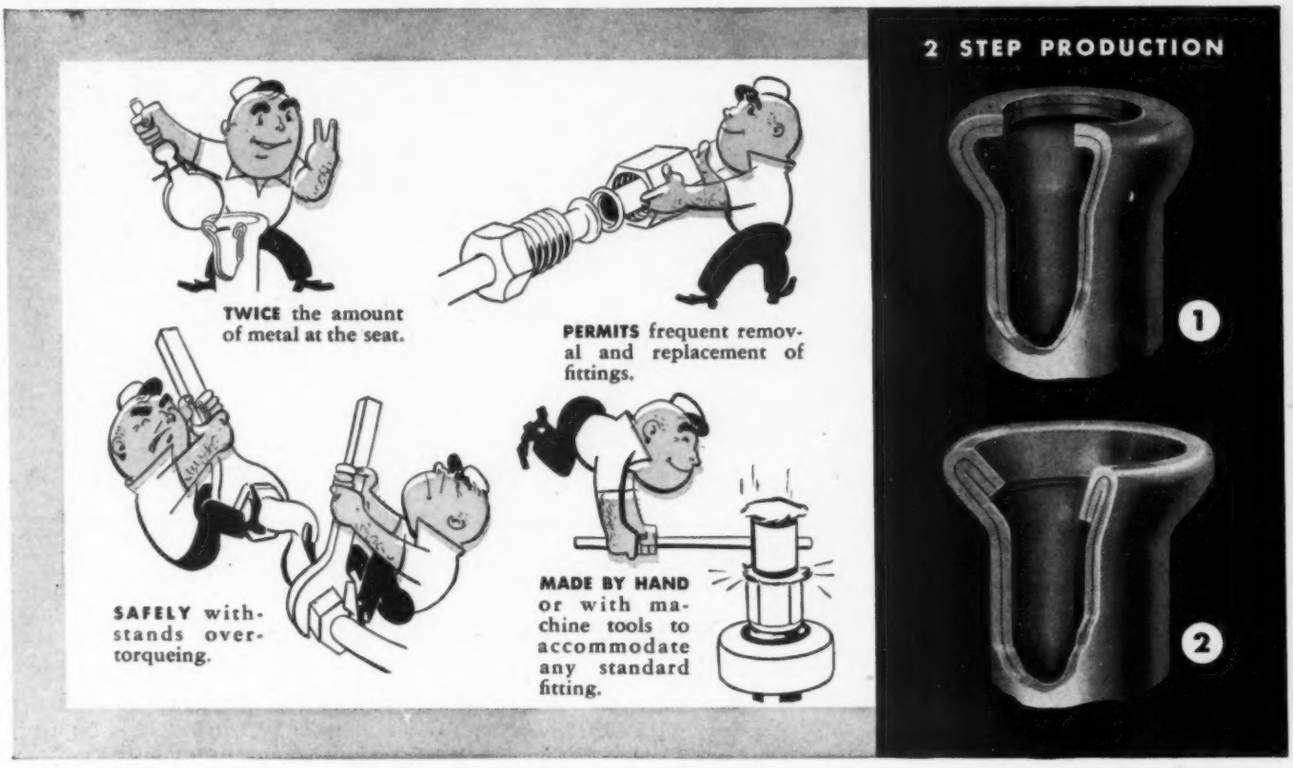
Macwhyte Company, Kenosha, Wis., makers of wire and wire rope, slings, cable, etc., recently celebrated its 25th anniversary. Employes who have completed 25 years of service with the company were presented with gold watches.

Edw. S. Christiansen Co., of Chicago, announces removal of its Eastern division sales offices from the 32nd floor of 30 Rockefeller Plaza, New York, to showroom and office space of the mezzanine

(*Continued on page* 344)

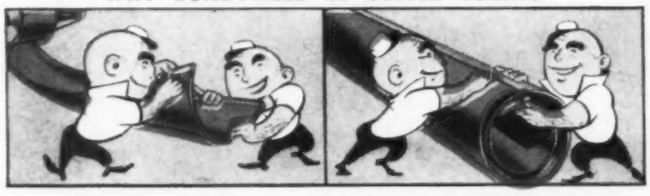
Don't miss this double feature

Bundy Double Flare for Leakproof, Pressure Proof Joints



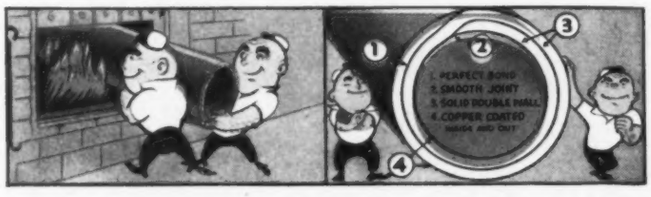
Plus Bundyweld Double-Wall Construction for Extra Strength

WHY BUNDYWELD IS BETTER TUBING



1 Bundyweld Steel Tubing is made by a process entirely different from that used in making other tubing. A single strip of copper-coated S.A.E. 1010 steel is continuously rolled twice laterally . . .

2 . . . into tubular form. Walls of uniform thickness and concentricity are assured by the use of close tolerance cold rolled strip. This double rolled strip passes through a furnace where the . . .



3 . . . copper coating fuses and alloys with the double steel walls. After brazing and cooling, it becomes a solid double wall steel tube, copper brazed throughout 360° of wall contact . . .

4 . . . copper coated inside and out, free from scale, closely held to dimensions. Hard or annealed in standard sizes up to 5/8" O.D. Special sizes cold drawn. Also in Monel, nickel and nickel alloys.

FOR ANY lines where over-torqueing, high pressures or excessive vibration are encountered, don't overlook this double feature—Bundy's Double Flare plus Bundyweld Steel Tubing with its solid, double-wall construction.

Adopted as a standard by the Society of Automotive Engineers and produced with high uniformity at rates up to 10,000,000 per month, the Bundy Double Flare has proved its worth during more than 15 years of usage for fuel, lubrication and hydraulic brake lines. And Bundyweld Tubing, rolling out of our plant in quantities up to 50,000,000 feet per month, is finding successful applications wherever outstanding mechanical properties are in demand. For detailed information, write today. *Bundy Tubing Company, Detroit 14, Mich.*

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES

Pacific Metals Co., Ltd.
3100 19th St.
San Francisco 10, Calif.

Standard Tube Sales Corp.
1 Admiral Ave.
Maspeth, N.Y.C., N.Y.

Lapham-Hickey Co.
3333 W. 47th Place
Chicago 32, Illinois

Rutan & Co.
404 Architects Bldg.
Phila. 3, Pa.

Eagle Metals Co.
3628 E. Marginal Way
Seattle 4, Wash.

Alloy Metal Sales Ltd.
861 Bay St.
Toronto 5, Canada

"IF THAT TOP KICK COULD JUST SEE ME NOW!"



VETERANS! WHY NOT RUN YOUR OWN BUSINESS?

You can cash in on what you learned in the army about welding. Thousands of 200, 300 and 400 Ampere AC and DC Arc Welding units are surplus and available to you on veteran priority. There are large quantities of Hobarts and Lincolns, quite a few Westinghouse and fair amounts of other makes for sale now. Most of the equipment is used and in good operating condition. Best of all, it is being sold at prices you can afford in setting up your own repair shops or for contract work. Write, wire or phone the nearest War Assets Administration Regional Office below or come in and ask for the special veterans' service section.

FREE INFORMATION

For full information clip and mail this coupon to War Assets Administration:

Please send me complete information on the availability, condition and location of the following types of equipment:

☐ Hobart Arc Welders
☐ Lincoln Arc Welders
☐ Westinghouse Arc Welders
☐ Electrodes and Welding Rods

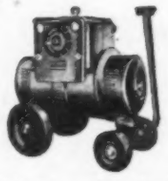
Arc Welding Equipment: AC.... DC....
Electric Motor Driven: Volts....Phase....Cycles....
Transformer Type: Volts....Phase....Cycles....

Name.....

Firm.....

Address.....

City.....State.....



Hobart — Standard models of this make available in large quantities and most ratings.



Lincoln—In all models and most ratings. Hundreds in the popular 300-400 Ampere size.

EXPORTERS: Most surplus property is available to the export market. Merchandise in short supply is withheld from export, and if such items appear in this advertisement they will be so identified by an asterisk.

All arc welders are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area, and then to purchase the material offered herein.

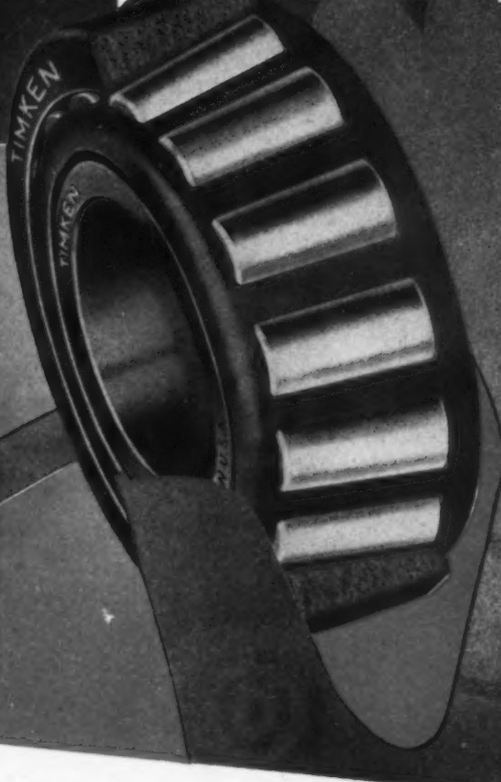
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GOVERNMENT OWNED SURPLUS

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

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TIMKEN BEARINGS SINCE *1910!*

Forty-eight years ago The Timken Roller Bearing Company pioneered the original tapered roller bearing.

Since 1910 ***seven hundred and seventy-one million*** Timken Tapered Roller Bearings have come out of the Timken Company's plants and gone into service!

The engineering and metallurgical experience gained in developing, manufacturing and applying these bearings in automobiles and all kinds of transportation and industrial equipment is one of the most important reasons why

"TIMKEN" stamped on ... you buy and accept no other. ... Roller Bearing Company, Canton ...

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

To Honor Your Veterans



This Rich Bronze Plaque

created by master craftsmen in the enduring metal of the arts, fittingly expresses reverence for the memory of those who gave their lives, and honor to all who served in the armed forces. Beautifully etched design with draped flags reproduced in full natural colors.

Shield provides space for gold star names. If not needed for this purpose is finished in red and white. Plaque mounted on solid walnut panel, is 11″ x 14¾″, accommodates any number of names up to 60. Panels may be rearranged to make plaque suitable for one or only a few names. Price $50.00 plus $1.10 for engraving each complete name. (Larger sizes to accommodate more names quoted on request.) Write us or place your order now.

ETCHING COMPANY OF AMERICA
1520 MONTANA STREET, CHICAGO 14, ILLINOIS
SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

(*Continued from page* 340)

floor of that building. All forms of aluminum and magnesium raw materials as well as semi and fully fabricated assemblies and finished goods will be on exhibit.

Economy Pumps, Inc., Hamilton, Ohio., has acquired the Klipfel Manufacturing Co. of Chicago, manufacturers of items required for fluid flow regulation.

Portsmouth Steel Corp. has been organized by Cyrus S. Eaton of Cleveland, and others, who have acquired the Portsmouth works of the Wheeling Steel Corporation of Portsmouth, Ohio., and the Emperor Coal Company of Kentucky. Portsmouth Steel Corp. will have a capacity of 50,000 tons of steel ingots per month, and will engage in the manufacture of a variety of steel products including ingots, slabs, sheet bars, tie plates and wire products.

Link-Belt Co., Chicago, Ill. George P. Torrence has rejoined the organization as executive vice-president, and will become president November 1, 1946, at which time William C. Carter retires as



G. P. Torrence

president, in accordance with the company's retirement plan. Mr. Torrence was with the company from 1911 to 1936, when he resigned as president. He has been in Cleveland since 1936 as vice-president of the Rayon Machinery Corporation, and as president of the Cleveland Pneumatic Tool Company.

Evans Products Co., Detroit, Mich., has acquired woodworking plant at Grand Haven, Mich. Production will include molded plywood radio cabinets and furniture components and molded plywood products for industrial use.

Superior Engine Div. of National Supply Co. has moved its branch office from Washington D. C. to the Tucker Bldg., 411 S. Paca St., Baltimore, Md. New office will cover Delaware, Maryland, Virginia and North and South Carolina territories.

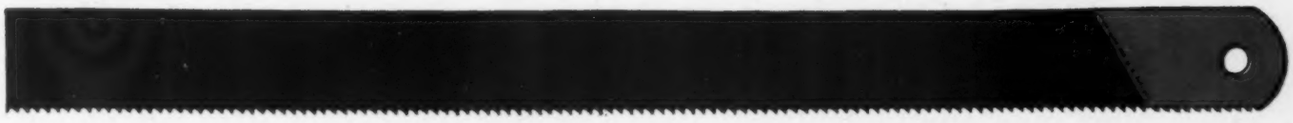
New York Belting & Packing Co., Passaic, N. J. George G. Deverall has been appointed sales representative in New England, New York, New Jersey and Eastern Pennsylvania, with headquarters at the company's plant in Passaic, N. J.

J. E. Conaway has been named manager of the Dallas district of New York Belting & Packing, succeeding Walter E. Belcher who has retired. His offices will be at 3439 Westminster St., Dallas, Tex.

Get SIMONDS



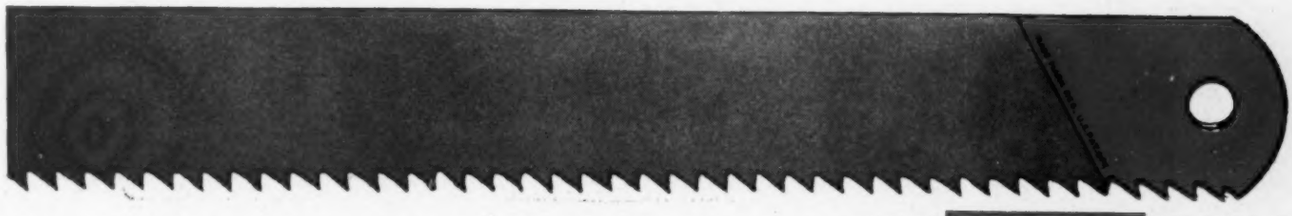
"RED END" HACKSAW BLADES

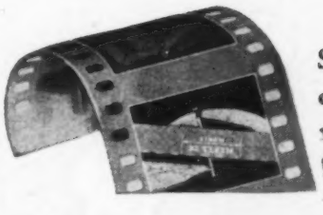


. . . AND GET A LONGER RUN



FOR YOUR MONEY





SEE SIMONDS SOUND-FILM, in color, showing how to get the best results and longest service out of the finest blades made . . . SIMONDS "Red End" Blades for Hand and Power Hacksawing. You can arrange with your Industrial Supply Distributor for a showing of this interesting movie. Or write to the nearest Simonds office.

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.

Other Divisions of SIMONDS SAW AND STEEL CO. making Quality Products for Industry

SIMONDS STEEL MILLS	SIMONDS ABRASIVES	SIMONDS CANADA SAW CO. LTD.
Special Electric Furnace Steels	Grinding Wheels and Grains	Simonds Products for Canada

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

Give a Worker a
HAND CLEANSER...



...he can use with confidence, one that cleanses quickly, thoroughly, yet gently and safely, that prevents defatted skin and keeps vital hands in "tip-top" working condition!

These Qualities You Can Depend On With

Lightfoot
Industrial
HAND CLEANSERS

INTEGRATION is the secret of Lightfoot's speedier, more thorough yet more gentle cleansing. This exclusive process results in perfect uniformity of texture and mixture, in which each *individual particle* is a *complete* cleanser in itself.

LIGHTFOOT'S SAFETY results from a combination of quality ingredients, a low pH index, and the "know-how" of more than 35 years of quality soapmaking.

Write for samples, or assistance on specific cleansing problems . . . no obligation, of course!

LIGHTFOOT SCHULTZ
COMPANY
NEW YORK: 663 Fifth Avenue
CHICAGO: 43 East Ohio Street

Approved . . . BY LEADING PLANT MEDICAL AND SAFETY DEPARTMENTS

Satisfaction in Service

(*Continued from page* 87)

to do for others. There is no thrill quite equal to that which is ours on meeting a seemingly impossible situation and fighting it through to a successful finish. In my case, it is the task of keeping supplies, equipment and services flowing to provide the vital and imperative needs of a living community. It is a constant challenge to the best that is in a man.

I count myself fortunate indeed to have the privilege of filling this important post for my neighbors. What do we do for them? Well, not long ago a large quantity of large size cast iron water pipe was needed for an urgently needed veterans housing project. There was none on the market; our request for official sealed bids went unanswered. Our effort was redoubled. The search went on, and finally a source of supply was found, and a prompt delivery effected. To top it off, the negotiated price showed a saving to the taxpayers of $20,000. That is a substantial part of what it costs to operate my department for a year. That's all in the day's work; every Purchasing Agent could cite similar cases, and the buyer's company ought to know about them. Why shouldn't I like my job?

One of the most enjoyable parts of my work is my membership in the National Association of Purchasing Agents. Here I am one among nearly 10,000 men and women all engaged in the job of purchasing, representing every conceivable type of business and every section of the United States and Canada. All are banded together in the common purpose of bringing higher standards to the profession, higher efficiency to themselves, and greater service to the business which employs them.

Large though this membership is, the members are brought into intimate contact with each other through active local and regional groups and the constructive program of our national office. I have enjoyed and profited by these personal contacts. I do not always agree with all that the "experts" propound. In fact, I disagree frequently, and quite often they disagree with each other. But they keep me alert and thinking about the job.

In one way or another, I have derived a lot of benefit from this association with 9,999 other purchasing men, to make my work more efficient, more enjoyable and more effective. And, perhaps in a small way, I have contributed to the sum of this service. For our Association, with its plan of operating "from the bottom up", is a truly democratic organization. Every member's voice is heard—from the local group through the District Council, through the National Vice President to the Executive Committee for final consideration and action. The good of all, not of a few, is the measuring stick.

I never resent it when purchasing is referred to as a "service function". For there is a tremendous value and satisfaction in service. Giving service is the Purchasing Agent's job. I like it.

* * *

Buying Stoker Equipment

(*Continued from page* 102)

the coal investigation precede the equipment selection. Before the equipment manufacturer is asked to bid on the stoker equipment he must know what fuel or fuels are to be used.

A good practice is to select about four fuels, giving a primary fuel and a second, third, and fourth alternate. This means that the equipment should be rated for all four, because at any time after the equipment is installed it may be necessary to use any of the four depending upon transportation and other factors that may affect cost.

Whatever fuels are to be used must be the subject of agreement between the supplier and the consumer. The equipment builder cannot be held for poor performance if fuel other than that specified is supplied.

The coal specification should state the usual extremes for moisture, volatile matter, heat content, fusion temperature, grindability, size of maximum, and size consist, ash content. All of these factors are important and must be agreed to by both parties. In some instances where the supplier recommends other than what the user thinks he should have, a performance test may easily settle the question. It is hazardous, in any case, to select coal on the basis of what the performance may be with existing equipment. For example, a chain grate stoker may not give any indication on a fuel test as to how a spreader will perform with the same fuel.

(*Continued on page* 350)

Let's be brief



HAND BLADES
ARE MADE OF
MOLYBDENUM
HIGH SPEED STEEL
THEIR OUTSTANDING FEATURE
UNBREAKABLE
THEREFORE
SAFER
AND
MORE ECONOMICAL

AMERICAN SAW & MFG. CO.
SPRINGFIELD, MASSACHUSETTS



Fred H. Bowes, Vice President & Sales Manager of Etching Company of America, (right) explains the uses of his company's products to Ray Reeves, Director of Purchases, Teletype Corp., Chicago, Illinois.

"Our Sales Policy Starts with the P. A."

"We consider the Purchasing Agent the most important factor in our selling", says Mr. Bowes, "because ultimate sales depend on winning his interest right at the start. It is through the P.A. that we secure the 'request for quotations' that gives us an opportunity to quote on his company's requirements. That is why we concentrate on supplying the P.A. with all the assistance and information we can to help him."

The Etching Company of America is one of hundreds of progressive companies that tell the story of their products directly and effectively in the pages of **PURCHASING**—the Purchasing Agent's own magazine.

Your advertising in **PURCHASING**, by paving the way "right at the start" for the meeting between your salesmen and the P.A., may prove an important factor in acquiring valuable new accounts.

For further facts regarding this productive, economical, salesmaking magazine, write **PURCHASING**, 205 East 42nd Street, New York 17; 333 North Michigan Ave., Chicago 1; Leader Bldg., Cleveland 14; 448 South Hill Street, Los Angeles 13, California.



ABC ABP
A CONOVER-MAST PUBLICATION

WE'RE TALKING ABOUT YOU

to 40,000 Sales Executives . . .



. . . and we're going to keep on telling them how the *modern* P. A. operates until every last misconception about today's purchasing methods has been wiped out.

When the able sales engineer and the modern purchasing agent get together, business is transacted intelligently and quickly and with a minimum of lost motion. Your business is buying . . . his is selling. You know what you want . . . he knows what he can offer. Obviously a lot of time can be saved when every Sales Manager is made to realize what a vital function today's Purchasing Agent performs in the buying of practically every kind of equipment.

And your magazine has resolved to *keep on* driving this truism home until this great educational job is complete.

Widely Used to Keep Count!



Industry's favorite "Watchdog of Production" since 1906 . . . Redington Counters are *widely used* on punch presses, pumps, screw machines, packaging machines . . . conveyor lines, can making and box making machinery . . . in fact, *all types* of machinery . . . and production lines. Easy to install . . . *100% accurate*. Write for new catalog.

F. B. REDINGTON CO.

103 S. Sangamon St. Chicago 7, Ill.



Prompt deliveries



both types!

WIREGRIP Belt Hooks that can be applied with any make lacing machines, have double (patented) aligning cards that hold hooks in perfect alignment, prevent handling and card-end loss — every hook saleable and usable. Made in 6 sizes.

STEELGRIP Belt Lacing is applied with a hammer. Comes in 11 sizes, in standard boxes, handy packages or long lengths for wide conveyor belts. Have 2-piece hinged rocker pins.

Write for Catalog

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

5378 Northwest Highway, Chicago 30, U.S.A.

Buying Stoker Equipment

(*Continued from page* 346)

It is well, in the long run, to take the advice of reputable fuel suppliers and equipment manufacturers in the selection of the fuel and the stoker equipment. The user, however, should insist that the plant be capable of handling a reasonable range of the lower grade coals.

* * *

Meeting Transportation Needs

(*Continued from page* 105)

creasingly important one.

The simplification and standardization of stores stocks is highly important at this time. Substitutes necessarily must be made for many standard products, yet to allow these substitutions to throw your department into confusion is to waste money.

Profits for Railroad

With operating costs what they are, it is important that every car hauling company materials should be loaded to capacity and handled promptly. The reduction of non-revenue ton miles is in reality a profit for your railroad.

Loss and damage prevention, and salvage and disposition, in a similar way, can mean revenue. Cut damage and loss and you increase profits.

Diesel locomotive parts, their purchasing and storekeeping, is important now and will become ever more so with each month that goes by. This, to many, is a new field. It would be well to study the reports of this committee with an eye to the future.

The conservation of materials in the light of improved methods and research, I have purposely left to the last. The field of research, to my mind, offers unlimited possibilities. Research is making available for our uses light metals, magnesium, plastics, fabrics, preservative coating, etc. These great advances of American skill and initiative, if adapted profitably and effectively by the railroad industry, can bring us the greatest era in the history of rail transportation.

Knowing the strength and unity of railroad supply officers and employees and their eminent qualifications for the job ahead, I have full confidence that our peace-time material and supply problems will be solved with intelligence and proficiency.

IN CLEVELAND IT'S THE

HOLLENDEN

HOME OF THE FAMOUS

VOGUE ROOM

1000 ROOMS WITH BATH
RADIO IN EVERY ROOM
FIVE FINE RESTAURANTS
Central Downtown Location

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Unlocking the chemical treasure house of coal, and extracting and recovering its multifold components for the uses of science, industry and commerce, is the business of Pittsburgh Coke & Chemical Company.

Here modern plant facilities, earnest and foresighted research, favorable shipping location and advantageous sources of supply combine to assure you of dependable, uniform, quality chemicals.

Expanding volume and range of products and increasing capacities make *Pittsburgh* better able to serve you than ever. Our technicians will welcome an opportunity to discuss your needs.

"PITTSBURGH"
Coke and Chemical Products

AROMATIC HYDROCARBONS:
BENZOL, TOLUOL, XYLOL, NAPHTHALENE
TAR ACIDS: PHENOL, CRESOLS
SULPHURIC ACID: ALL GRADES
TAR, PITCH and CREOSOTE
SULPHATE OF AMMONIA
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SODIUM CYANIDE · SODIUM THIOCYANATE
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OTHER PRODUCTS:
NEVILLE COKE—EMERALD COAL—PIG IRON—GREEN BAG CEMENTS—CONCRETE PIPE—LIMESTONE PRODUCTS—IRON ORE

INQUIRIES INVITED

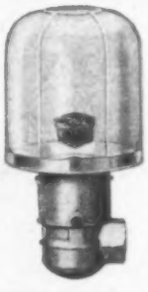
P C&C O

CHEMICAL SALES DIVISION
Pittsburgh Coke & Chemical Company
Grant Building · Pittsburgh 19, Pennsylvania

Dig Out
HIDDEN PROFITS
With TRICO
REG. U.S. PAT. OFF.







AUTOMATIC OILERS—End bearing failures—reduce motor burnouts—save time, oil, worry—provide carefree, positive lubrication. Made in many sizes and styles for every application.

RENEWABLE FUSES—Give double protection with three times the service! Uses famous custom-built, time-lag, "powder-packed" Renewal Element. Absolutely tamperproof—non interchangeable links—safe time lag plus many other money saving features.

FUSE PULLERS—Built for years of rugged duty. Prevent shocks, burns, lost time—eliminate compensation penalties—speeds fuse replacement. Should be carried by all electricians and placed at every switchboard and fuse box.

FUSE CLAMPS—Lock fuses and clips together in vice-like manner. Stop premature fuse blowings—burnt fuses and clips—lost production—arching and heating at contacts—wasted current—fire and accident hazards.

LEAKPROOF AIR GUNS—Used for blowing chips, dust, dirt, etc. Positively leak-proof—finger-tip control—automatic shut-off—streamlined to hose. Preferred for its modernized, simple, compact, and practical design.

WRITE for Helpful Buying Guide!

TRICO FUSE MFG. CO.
MILWAUKEE 12, WISCONSIN



KENNAMETAL
CEMENTED CARBIDE
TOOLS, BLANKS, and SPECIALTIES

- FOR FAST, ACCURATE METAL-CUTTING . . . complete selection of single-point tools and milling cutters.
- RESIDENT TOOL ENGINEERS in 24 cities available for expert help in proper selection and correct use.
- WAREHOUSES in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.

KENNAMETAL
SUPERIOR CEMENTED CARBIDES
KENNAMETAL Inc., LATROBE, PA.


BENDER

SHEAR

"DIE-LESS" DUPLICATING
NO DIES!

"DIE-LESS DUPLICATING"... a new industrial technique made possible by the accuracy, adaptability and ease of operation of DI-ACRO Precision Machines—Shears, Brakes, Benders—especially when used as a continuous, integrated production process.

The DI-ACRO System of "Metal Duplicating Without Dies" makes parts just as accurately as can be done with dies, to a tolerance of .001" in all duplicated work. The delay of waiting for dies is avoided, deliveries speeded up.

BRAKE

Write for Catalog

"DIE-LESS" DUPLICATING
DI-ACRO PRECISION MACHINES
DIE-LESS DUPLICATING

O'NEIL-IRWIN MFG. CO.
305 EIGHTH AVENUE, LAKE CITY, MINNESOTA

A Blueprint of the Social Revolution

(*Continued from page* 146)

returned to them by the Treasury Department. This is, of course, a type of profit which cannot continue too long.

Almost 25 years ago that acute French observer, Jacques Bainville, pointed out that Germany and Russia would make a natural combination of resources and technical organizing ability and that a combination of the two was a strong long-range probability. Today, we are witnessing another great invasion by the East which bids fair to produce a profound change in the West's cultural pattern as the others could not.

Here then is a battle of cultures the like of which the world has not seen and it is a battle now of real contraries and not of mere differences. We may be opening an entirely new chapter in history with nothing in the past record to suggest the shape of the story that it will ultimately record. Soviet Russia today occupies one-half of the territory that once constituted Germany thirty years ago. Is there any observer of the modern scene who believes that she has the smallest intention of abandoning her hold upon what she has seized, or that all the conditions are not present for the establishment in the very heart of Europe of a large and strong outpost of culture fundamentally foreign to that of the West? The Russians evidently have taken to heart Lenin's terse but truthful dictum—"Who controls Germany controls Europe."

It would not be much of an exaggeration to say that we are now witnessing the opening of the battle of cultures between East and West. So once again in 1946, individuals are looking to developments in their own backyard and are completely overlooking the movement of a cycle that is bound to envelop them in its wrath.

The usual forecasts do not recognize that the whole world is in the midst of a social revolution.

* * *

The McIntyre Company of Newton, Mass., has been purchased by the Pennson Corporation of New York City and Waltham, Mass. This is the corporation's second acquisition and is to be combined with its first purchase, the Waltham Horological Manufacturing Co. of Waltham, manufacturers of precision parts. The McIntyre Company manufactures industrial hydraulic and water pumps and fluid motors.

FOR LEAKPROOF, TROUBLE-FREE PIPE RUNS

Cut-a-way view of a Walseal Tee showing ring of silver brazed alloy, and completed Silbraz joint.



Specify Walseal* Products

On all types of piping jobs where Type "B" copper or red brass pipe is used, trouble can be avoided by installing Silbraz* joints — made with Walseal valves, fittings and flanges.

Threadless, patented Silbraz joints are silver brazed (not soft soldered) pipe joints that are leakproof, trouble-free — permanent . . . connections that will not creep or pull apart; that literally join with the piping system to form a "one-piece pipe line". Thus, these modern joints eliminate the need for maintenance and costly repairs — especially important where lowered operating costs are imperative.

For complete details on the modern Silbraz joint, made with Walseal products, write for a copy of Walworth Circular 84.

**Patented — Reg. U. S. Patent Office.*

Recommended for

Hot and Cold Water Circulating Systems

Boiler Feed Lines

Steam Return Lines

Condensate Lines

Low and High Pressure Air Systems

Lubricating Oil Circulating Systems

Industrial Gas Piping

Solvent and Vacuum Piping Systems

Make it a "one-piece pipe line" with WALSEAL

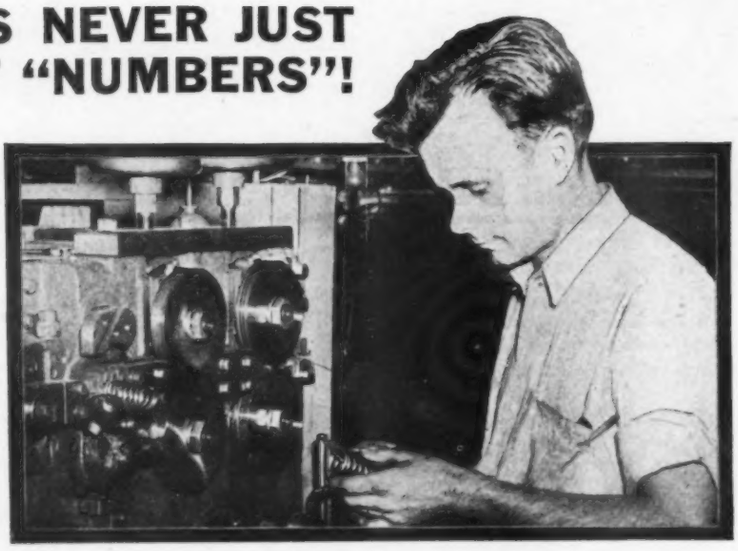
WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

WHERE YOUR JOB IS NEVER JUST ONE OF A SERIES OF "NUMBERS"!



Day in, day out, a steady flow of spring and screw machine product work goes through the Peck plant, but not one of these consignments is ever regarded as a "run of mine" job. Some one is personally responsible for the correctness of every piece of work — even if it is just a little 8-32 machine screw or a simple wire helix.

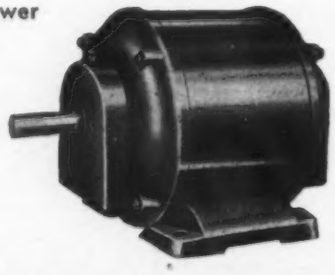
Occasionally we are asked to ease up a bit on our standards, but the answer is always and invariably NO! Even were we disposed to lend a willing ear to such "appeasement," we would have confusion throughout the plant. For workmen who all their lives have held rigidly to a high standard would have a difficult time trying to depart from that standard and still maintain production.

Every job entering the Peck plant is somebody's personal obligation!

Peck THE PECK SPRING CO., 40 WELLS ST., PLAINVILLE, CONN.
SPRINGS & SCREW MACHINE PRODUCTS

Before you specify
ANY MOTOR, *check these* **VALLEY** ***ADVANTAGES***

- ✓ **Wide Adaptability**—sizes ½ to 75 h. p.
- ✓ **More Flexibility** in power planning.
- ✓ **Takes Unusual Power Loads**
- ✓ **Drip-Proof . . . Splash-Proof**
- ✓ **Economical Operation**
- ✓ **Cool**
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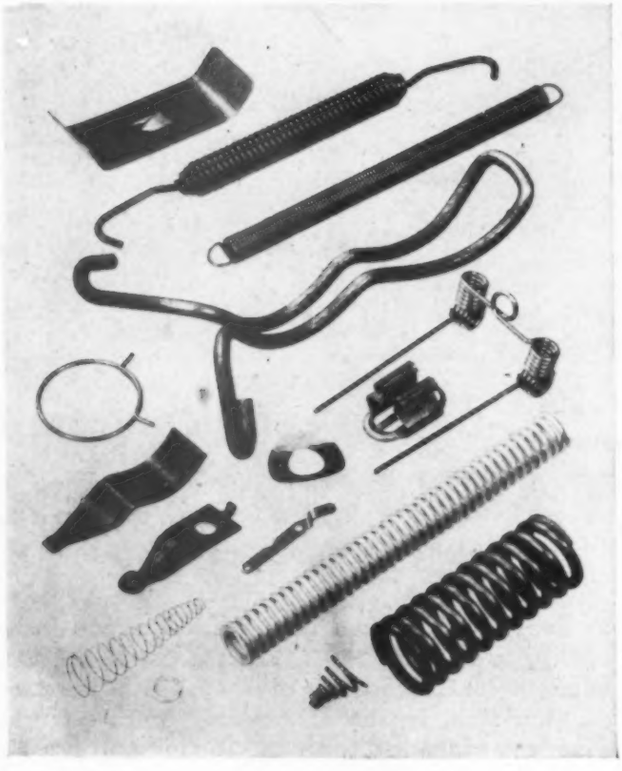
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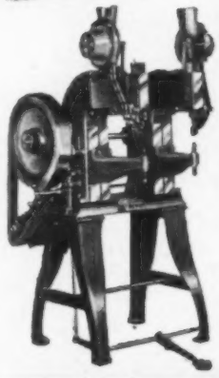
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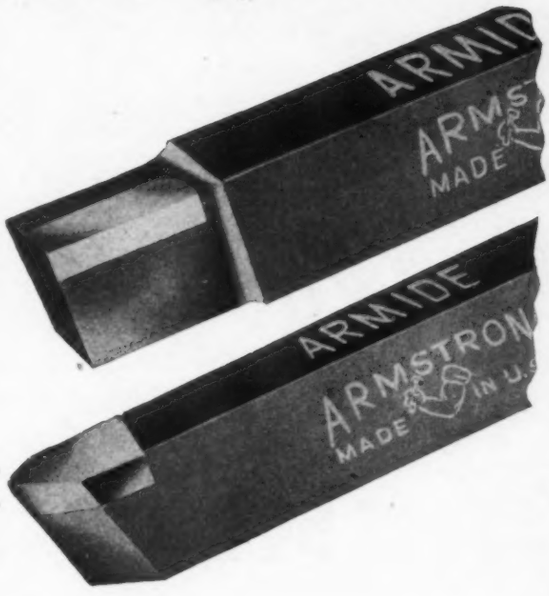
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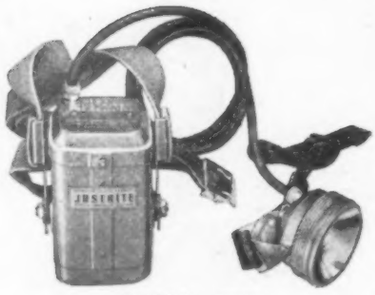
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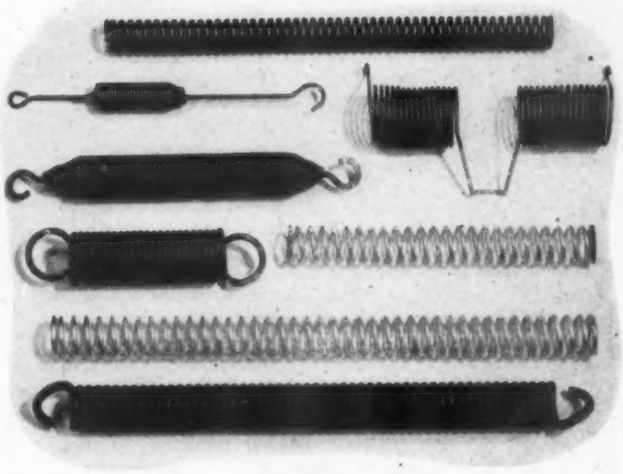
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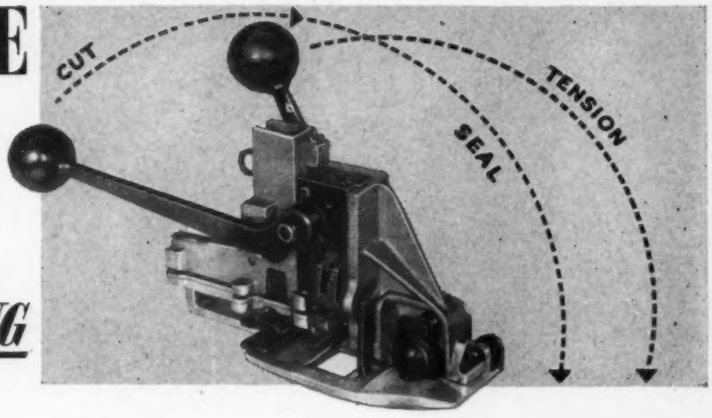
Packing glass jars moving on conveyor system. A-2 is equipped with tool mount



In this shipping room, machine parts are boxed and strapped with A-2 unmounted.



Here, stove pipe elbows are bundled with an A-2. Note: the tool mount makes this stropping operation an easy one.



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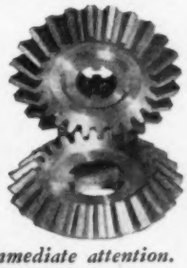
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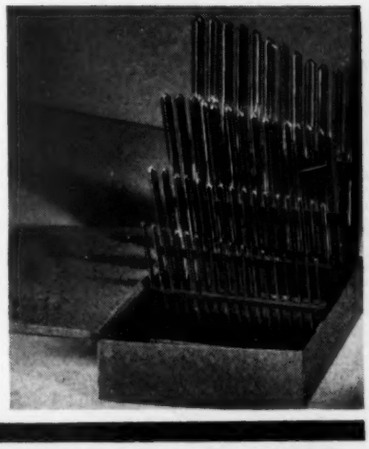


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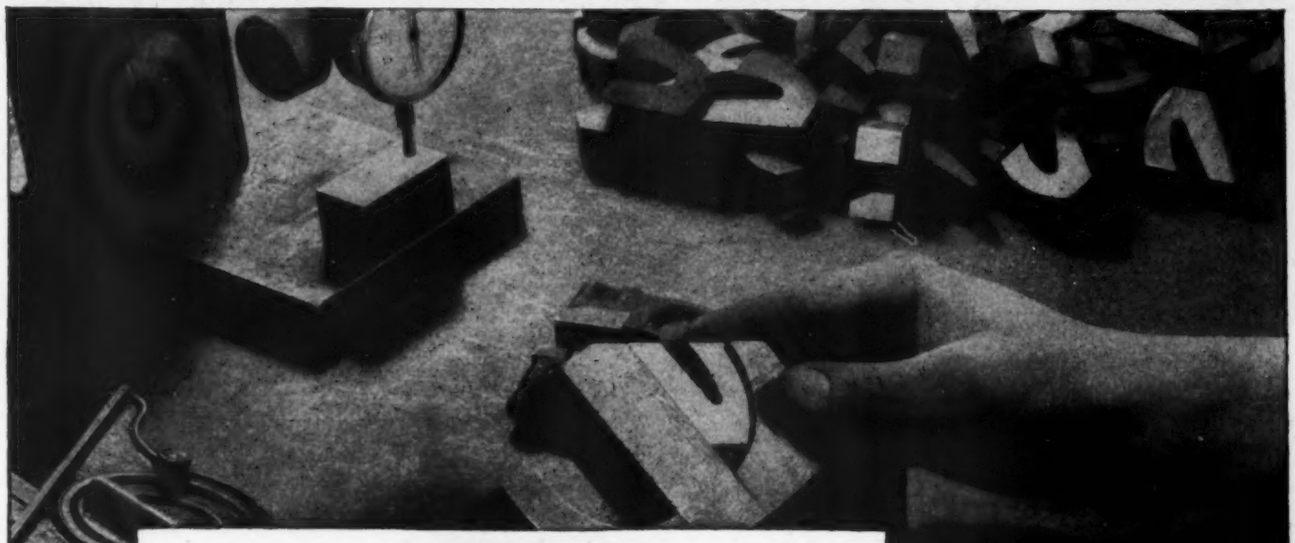
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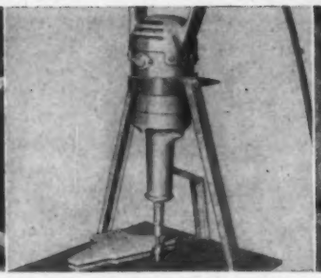
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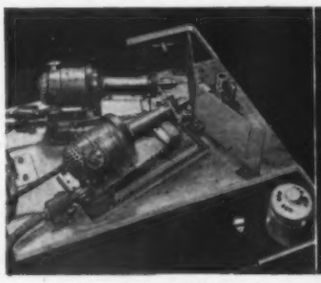
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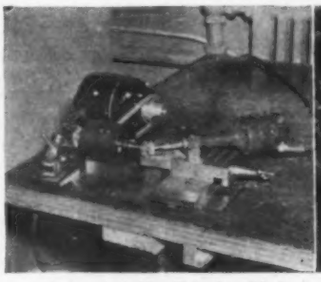
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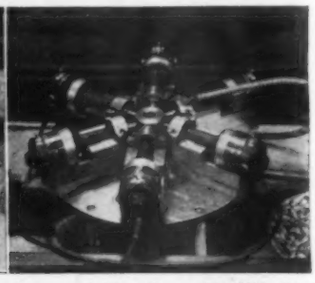




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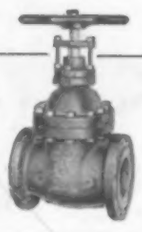
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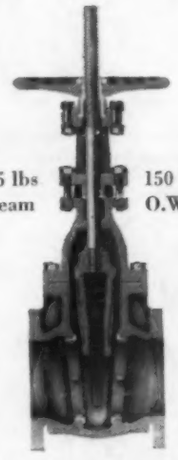
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